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PART I

SINO SOVIET BLOC AIR DEFENSE SYSTEM IN THE FAR EAST

1.0 INTRODUCTION. The purpose of this publication is to present a concise summary of the Sino-Soviet Bloc Air Defense System in the Far East. (A more detailed study of this nature can be found in the JSTPS publication, Air Defenses, Sino-Soviet Bloc).

Part I of this publication discusses the characteristics, performance, capabilities and limitations, and deployment of the equipment comprising the air defense system. A summary and conclusions, which should be considered in mission planning, is given under Tactical Considerations (Para 1.8).

Part II of this study contains a Radar Horizon Nomogram for determining the radar line-of-sight horizon for aircraft at various altitude.

Part III discusses the construction and use of Strike Penetration Templates, which provide a graphic solution for the problem of the possible points of interception by fighter aircraft, and FLAK TEMPLATES.

Part IV contains graphic locations of installations with explanatory textual material, and tables of Sino-Soviet air defense equipment.

1.1 AIR DEFENSE ORGANIZATION.

The Soviet Air Defense Command, known as PVO, is on a equal staff level with the ground, naval, and air services. Personnel, equipment, and facilities are furnished to the PVO by the other services. The PVO exercises operational control over all elements necessary to direct air defenses along the periphery of, and within, the Soviet Union. This command is divided into air defense districts which are further subdivided into air defense sectors. Both the district and sector headquarters receive information from early warning radar sites, evaluate this raw data, and disseminate data and orders. The air defense district coordinates the air defense activities of the sectors, which are considered to be the most important element in the air defense chain-of-command. The sector HQ, which is directly responsible for the air battle, plots incoming raids and makes decisions on launch and intercept.

The structure of the air defense system is being modernized continuously. With the deployment of the Semiautomatic Air Defense System (SADS), the air defense organization is expected to undergo an alteration that will result in improved efficiency. With incorporation of SADS, target and intercept data will be handled by computers in the sector headquarters; Air Defense Zones, incorporating several sectors, will supplant the sector as the most important element in the air defense chain-of-command.

CHICOM and NORTH KOREAN Air Defense organizations are modeled after the PVO with one or more districts subdivided into sectors. The CHICOM headquarters is at PEIPING and the NORTH KOREAN headquarters is at PYONGYANG. Although the air defenses of each country are separate and independent systems, close liaison exists among the three countries.

1.2 AIR DEFENSE OPERATIONS.

The Soviets have developed and deployed an extensive system of Early Warning (EW) and Ground Controlled Intercept (GCI) radars, fighter interceptors supported by Anti-Aircraft Artillery (AAA), and Surface-to-Air Missiles (SAM). This system is difficult to penetrate without detection and opposition. Passive detection devices and early warning radars which alert the system, ground controlled intercept radars which provide positioning information for fighter direction, and widespread deployment of AAA and SAM defenses around important targets pose a serious problem to be considered in attack mission planning.

1.2.1 TRACKING OPERATIONS. The flow of information at the sector level is as follows: The EW radars, passive detection equipment, and visual observers (visual observers are still used in NORTH KOREA and CHINA) pass information of an oncoming raid to the GCI radar controller in order to obtain a three dimensional position of the attacker. The sector filter center receives these inputs, this information is plotted, and tracking and identification operations are initiated. Information is probably correlated with adjacent filter centers and forwarded to district filter centers. AAA and SAM batteries in the vicinity are alerted of the possible "bogey" by the sector headquarters and attempt to acquire the incoming aircraft on their acquisition radars. If a raid cannot be identified, and a fighter scramble is indicated, the sector filter center probably passes information to the GCI controller to assist early identification of attacking aircraft on the GCI scope.

1.2.2 INTERCEPT OPERATIONS. Divisional or regimental GCI controllers vector aircraft to intercept, but they probably do so under the general control of the local sector commander. Soviet procedure for the manual (non-data link) control of interceptors does not differ significantly from western procedures. The techniques used may be categorized as follows: Close control, Loose control, Broadcast control, and Barrier or Combat Air Patrol control. Under Close control, the GCI controller instructs the pilot as to heading, speed, and altitude to fly; relative bearing to the target; time to go; and other necessary data to permit the pilot to detect the target and convert to a firing pass. Loose control is essentially a degraded form of Close control in which the controller transmits information

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on enemy forces, such as raid numbers, positions, headings, velocity, and altitude or to the information leaders of airborne interceptors. The formation leaders must then navigate to the target area and effect contact. If large numbers of aircraft are involved, Broadcast control, which is a degraded form of Loose control and a desperation tactic may be used. Under Broadcast control, information on the position, velocity, heading or altitude of the attacker is of poor to unknown validity. For example, the information may be based on nothing more than interpretation of jamming strobes. Interceptors under Broadcast Control are normally deployed in patrol or search type patterns.

Barrier or Combat Air Patrols (CAP) are often used by the Soviets to guard specific targets or approaches to targets after an incoming raid has been detected. The formation leaders of a CAP are normally under Close or Loose control until the battle is joined. Consequently, Barrier patrols will normally be placed within 125 NM of a ground controller. This technique requires formations to be positioned over reference points and kept in one location to await the enemy. This procedure is especially valuable in reducing system reaction time against high speed penetrations. CAP allows a very high density of Soviet interceptors in many areas. Although economically disadvantageous, this permits high employment of the total force. Since the majority of Soviet interceptors are not capable of All-Weather interceptions, this technique would be feasible only during periods of good visibility.

It is estimated that GCI sites are capable of controlling simultaneously a maximum of about six interceptors under Close control and greater numbers under Loose or Broadcast Control. To avoid saturation of the air control system, fighters may be scrambled and vectored in groups of four or more and Close control instructions given only to the designated leader of the formation. In the case of All Weather fighters, interceptors would be scrambled at intervals to permit engagement at the rate of approximately one intercept every five minutes.

SADS (Data-link) will improve the data handling and processing capacity and increase the raid handling capability for an air defense sector. It is estimated that the new system is designed to accommodate a maximum of 100 tracks at any one time -- 50 targets and 50 interceptors. A VHF data-link ground-to-air system for interceptor control will give the Soviets a substantial increase in the number of interceptors which can be controlled over each VHF communication channel.

1.2.3 ANTI-AIRCRAFT ARTILLERY AND SURFACE-TO-AIR MISSILE OPERATIONS. Anti-Aircraft Artillery (AAA), which is still of considerable importance in the defensive posture of the Bloc nations, and surface-to-air missiles (SAM) are controlled by the air defense districts. An Army liaison officer at the district control center controls the AAA and SAM batteries within the district. At the sector level, a SAM/AAA liaison officer coordinates the activities of fighters and interceptors with the individual AAA/SAM batteries within the sector. When the threat moves toward the AAA zone of responsibility, data from the acquisition radar are used to assign each target to a specific battery. The fire-control radar in the designated battery then tracks the target and feeds information to a fire-control director which computes the firing data and controls the guns. Fire-control radars usually are assigned on the basis of one radar for each battery of 6 to 8 guns; however, order of battle information shows that there are not enough radars to satisfy this requirement in U.S.S.R. The ratio is even lower in NORTH KOREA and CHINA.

As with AAA, acquisition radars acquire the target and provide the necessary information to the SAM BOMB missile control radar for tracking the incoming raid at SAM sites.

1.3 ELECTRONIC EQUIPMENT

Electronic equipment is essential to the modern air defense system. Early Warning radars alert the system; Ground Controlled Intercept radars provide positioning information for fighter direction, and Surface-to-Air Missile and Anti-Aircraft Artillery sites require acquisition and Fire Control radars. Also important to the modern air defense system are Airborne Aid-to-Intercept radars which are installed in some of the Soviet interceptors, communications and data-link systems which are required for rapid dissemination of vital information, electronic countermeasures, and Identification Friend-or-Foe systems.

Most Bloc-Soviet electronic equipment is less sophisticated than that of the United States. Nevertheless, this apparent deficiency is somewhat offset by the deployment of equipments in large numbers.

By far the most important of all electronic equipments in an air defense system are the radars which form the eyes of the structure. The radar categories that are associated with air defense and which will be discussed in this study are: Early Warning and Surveillance, Ground Controlled Intercept, Height Finding, Acquisition and Fire Control, Identification Friend-or-Foe, and Airborne Aid-to-Intercept radars. Radars are further subgrouped according to their frequency range by a carrier-band letter designator, such as X, L, or S band.

Detailed studies of the Bloc electronic equipment can be found in ORI 26-10 and Electronic Intelligence Report (RACON/AIS 6).

RADAR FREQUENCY CATEGORIES

BAND	FREQUENCY (megacycles)	WAVE LENGTH (CM)
VHF	30-300	1000-100
F	225-300	133-77
L	300-1550	77-19
S	1550-5200	19-6.0
C	3900-6000	6.0-5.0
X	5200-10,900	5.8-2.7
K	10,900-36,000	2.7-.83

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1.3.1 EARLY WARNING AND SURVEILLANCE RADARS. There are three primary frequency ranges utilized by all the Soviet EW and Surveillance radars. These are: VHF, L-Band, and S-Band. Although the VHF radars are more widely deployed, the S-band radars play a more prominent role in the air defense system.

Radars operating within the VHF frequency band include the KNIFEREST/NI DUMBO families, SPOONREST, FORK REST, and TALL KING.

TALL KING is relatively new and considerably different from the earlier VHF radars. It is a powerful high performance piece of equipment that increases the Soviet line-of-sight detection range to approximately 400 NM. This radar is being deployed along the Soviet coastline and, when completely deployed, will be an extremely important element in the Soviet early warning detection system.

FOUR REST is another VHF yagi-type radar similar in appearance to the KNIFEREST. Little information is available on this radar, but there is speculation that it may be an inexpensive continuous wave, or pulse doppler radar with an effective low-altitude coverage capability. This hypothesis however cannot be verified at the present time.

There have been recent intercepts of signals from still another new VHF radar MOONCONE emanating from Communist China. At present no lobe pattern data are available upon which to construct a coverage diagram, but the Fleet Air Reconnaissance Squadron One estimates that the radar may be similar to the SPOONREST with a range capability approaching that of the TALL KING. Once again limited information precludes an accurate estimate of performance capabilities.

Many of the older VHF EW radars in the KNIFEREST/RDS/DUMBO families are used for back-up and gap fillers for primary sites.

S-band radars consisting of the TOKEN/STRIKEOUT/SLANT MESH, BIG MESH/BIG BAR, and BAR LOCK/CROSS OUT represent improvements in range, altitude coverage, ECCM, and performance over the older VHF radars. Many of these "S-band radars" have an additional EW beam operating in the 550-570 megacycle region (L-band).

The only radar of any consequence known to be operating in the L-band is the FLAT FACE. It is one of the few Soviet radars of radically new design. Its high mobility and good low-level detection capability render it quite versatile.

The main characteristics of the significant EW and surveillance radars in the Far East will be discussed in the following paragraphs. Significant characteristics are also listed in tabular form for easy reference in Table I of Part IV of this study.

a. VHF Band.

(1) NI DUMBO - An obsolescent equipment with no anti-jam features. It has been virtually phased out in U.S.S.R. with a few sets remaining in Communist China and several in NORTH KOREA.

(2) KNIFEREST - This radar comprises a major portion of the radars currently in use. It has a range capability comparable to the early S-band radars and may have a limited height-finding capability; however, resolution and low altitude capability is inferior. Anti-jamming features are reportedly included, but have resulted in limited improvement. Recent exercises in the Soviet Union indicate that this radar has a good anti-chaff (ECCM) capability.

(3) SPOONREST - This set is used as an acquisition radar for the SA-2 SAM system and in an EW role. The new SPOONREST B is electronically similar to the KNIFEREST and may gradually replace KNIFEREST in important areas.

(4) TALL KING - This latest type of operational radar is a permanently mounted parabolic mesh reflector 115 x 41 feet with a detection range of about 400 NM against small targets at an altitude of 125,000 feet. It has better low altitude coverage than KNIFEREST and extremely good high altitude coverage.

(5) SCR-270 - The most widely used radar on the CHINESE mainland. It is a modified version of older U. S. radars and has good high altitude coverage capability. It is of Chinese manufacture and has a limited height finding capability through lobe switching.

(6) FOUR REST - A VHF radar that has recently made its first appearance in the Far East. Little information is available on this radar at the present time.

(7) MOONCONE - The latest CHICOM produced EW radar. MOONCONE has parameters similar to SPOON REST and TALL KING with range estimates the same as the latter. This set was formerly named by IBM code BMDQ (BUDQ).

b. L-Band.

(1) FLAT FACE - This radar is designed for low altitude coverage. Although it is apparently being used as a medium range surveillance radar, and possibly for GCI, it has the potential for use as a mobile acquisition radar for a SAM system. It is estimated to have moving target indicating (MTI) circuitry and anti-jam capabilities.

c. S-Band.

(1) TOKEN/STRIKE OUT/SLANT MESH - TOKEN is a V-beam radar that can be used both for EW and GCI. STRIKE OUT is a modification of TOKEN in which the slant reflector has been repositioned horizontally to improve the high altitude coverage. TOKEN and STRIKE OUT are the first generation S-band radars. Although MTI does not exist on these radars, limited anti-jam capabilities do exist. SLANT MESH is a V-beam radar similar to TOKEN with equal range

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capabilities. SLANT MESH has 7 S-band frequencies rather than the 5 used by TOKEN and may improve its anti-jam capability. The V-beam construction of TOKEN and SLANT MESH gives them fair height-finder and GCI capability.

(2) **BIG MESH/BIG BAR** - BIG MESH is an improved and larger version of the TOKEN. This radar utilizes 5 S-band frequencies and one L-band (570 megacycles) frequency. BIG BAR is electronically identical to BIG MESH, but the construction of the reflectors are similar to the BAR LOCK. Both BIG MESH and BIG BAR are estimated to have MTI, and the 570 megacycle frequency may improve the anti-jam capability of these radars. Since both radars operate on the V-beam principle, they may be used for GCI as well as EW.

(3) **BAR LOCK/CROSS OUT** - These are second generation developments of STRIKE OUT. They have long range and high altitude capabilities. The 570 megacycle L-band beam is included with the 5 S-band frequencies which, along with MTI, increases the capability of the radars at low altitudes and in an ECM environment. These radars do not have a GCI capability.

(4) **CROSS SLOT** - A CHICOM developed and manufactured radar. It is a permanently mounted radar and has an impressive range and low altitude detection capability.

STRENGTH AND DISPOSITION OF EW RADARS: The Soviet approach to the solution of the detection and tracking problem is one of brute force. New radars are added to the inventory at established sites supplementing rather than replacing the older radars in the vicinity.

As can be seen in Part IV of this report, the EW coverage is complete along the communist Far Eastern coast. Even in the Far North the coastal area is dotted with radar installations. It is becoming increasingly apparent that the Soviets are establishing "Primary EW/GCI sites" along the periphery and that these primary sites are being standardized with the following: One or more of the best Soviet EW radars (BARLOCK or TALL KING); a height finder radar (ROCK CAKE, STONE CAKE, SPONGE CAKE, or SIDE KEY); a V-beam radar for EW and GCI back-up (TOKEN or BIG MESH); VHF EW back-up radars (KNIFEFEET and SPOONFEET); and a radar with a limited low altitude coverage capability (FLAT FACE). Along the coast of the Soviet maritime provinces and KARALIS Island, the primary sites are placed at intervals of from 30-50 NM.

The Soviets provide important areas with very dense radar coverage, elsewhere they maintain relatively shallow coverage by EW/GCI radars.

Apparently the CHICOMs are also establishing "Primary Sites". The normal CHICOM primary site consists of: A CROSS SLOT, SCR 270, and a KNIFEFEET or DUMBO. A TOKEN or BIG MESH V-beam radar supported by a ROCK CAKE height finder may be located at a primary site to provide a GCI capability. Virtually all of their important radar sites have the CROSS SLOT and/or SCR 270.

The NORTH KOREAN early warning radars are RUS, KNIFEFEET A, ZACH 18, SCR-270, and TOKEN. SO and BT-271 surface search radars may also be used in an EW role. Both coasts of NORTH KOREA are given an EW radar coverage within the capabilities of these obsolescent equipments. TOKEN is the most effective EW radar in NORTH KOREA when employed in an EW role.

CAPABILITIES AND LIMITATIONS OF EW RADARS: One of the primary strengths of the air defense system is the ability to detect targets at long ranges. Extensive deployment of radar installations permits overlap coverage and allows maintenance and repair of equipment without loss of complete coverage.

Pilots are cautioned not to attempt to utilize radar lobe patterns to forecast radar detection probabilities. These diagrams are useful only in determining order-of-magnitude probabilities for individual isolated radars. The probability of detection by a system of radars is a function of the parameters of all the radars which might be brought to bear on the target. This probability can be computed accurately only through involved processes.

The statement that system capabilities must be considered can best be explained through example: Suppose that, at a given point in space, it has been found that three radars can bear on the attacking aircraft, and that each of these radars has a 50% probability of detecting this aircraft. All other considerations aside, the laws of probability suggest that although each of these radars acting individually has only a 50-50 chance of detecting the attacker, the three in concert have an 87.5% probability of detection.

A major weakness in the air defense system of the Soviet Bloc is its poor capability to detect and track low altitude aircraft. Early Warning ranges are normally limited to line of sight; however, ducting conditions, which are always present to some extent over water, may permit detection beyond the radar horizon. Ground clutter and terrain masking make radar tracking extremely difficult at low altitude. Over land areas.

The Soviets are attempting to improve their low altitude capability with MTI circuitry in their newer radars. MTI improves the tracking capability of radars against low-flying aircraft; however, conventional pulsed radars, even those having MTI, usually provide inadequate data for low-altitude warning of targets over land or rough water and below a few hundred feet altitude.

The MTI feature is not normally utilized when the radars are being used for EW. Since the use of MTI results in a marked decrease in the detection range, it is used mostly for GCI purposes. Thus, the low altitude detection capability of individual EW sites is still considered poor. However, the Soviet's heavy concentration of radars with overlapping coverage makes it appear feasible for them to track targets, at least sporadically, at low altitudes.

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a. The Soviet capability may be summarized as follows:

(1) The Soviet's complex of primary sites has a good capability for detecting a high altitude target (30,000 feet and above) out to the PRF limited ranges (220 NM) of BAR LOCK and BIG MESH. If the site is equipped with TALL KING, a capability exists to detect targets out to 280-300 NM when the target is flying at or above the 30-60,000 foot line-of-sight altitudes associated with these ranges.

(2) For altitudes below those stated above, all aircraft regardless of size can expect to be detected at ranges equal to the radar horizon for flight altitude.

(3) In areas not covered by primary radar sites it is probable that detection will not occur until the penetrator is within 150-160 NM of the coast.

b. The CHICOM capability is as follows:

(1) The EW range capability along the CHICOM coast extends out to 160-225 NM against penetrators flying at altitudes in excess of 20,000 feet. Sites containing MOON CONE will probably permit EW coverage out to the radar line of sight horizon at all operating altitudes.

(2) The CHICOM-produced CROSS SLOT is estimated to have a good low altitude detection capability. Although the majority of their radars do not have such a capability, detection should be estimated for planning purposes at or slightly beyond the radar horizon for flight-altitude.

c. The NORTH KOREAN capability is as follows:

(1) The EW range capability is 150-225 NM against the high flying attacker over water.

(2) Although low-level detection is not expected to be good, detection should be estimated at the radar line-of-sight horizon for flight altitude.

1.3.2 **HEIGHT FINDING RADARS.** The height finders used in the Soviet Far East are the ROCK CAKE, STONE CAKE, SPONGE CAKE, and SIDE NET, all of which are essentially the same in signal parameters. The SPONGE CAKE and SIDE NET are new radars whose performance has yet to be fully evaluated; but it is expected that the performance of these radar will exceed the earlier height finders. The STONE CAKE has a greater range capability and a better radiation pattern than the ROCK CAKE and is utilized at the more important GCI sites. Refer to Table I for performance parameters.

DISPOSITION OF HF RADARS: The U.S.S.R. has ROCK CAKE, STONE CAKE, and/or SPONGE CAKE radars at their "primary" EM/GCI sites and SIDE NET has been colocated with TALL KING at many. The CHICOMS have received only ROCK CAKE which they are using to improve the height finding capability of V-beam TOKEN-type radars and to establish GCI sites by colocating a ROCK CAKE with an EM radar.

The NORTH KOREANS do not possess any height finders, but have limited HF capability using the V-beam TOKEN.

CAPABILITIES AND LIMITATIONS OF HF RADARS: ROCK CAKE and STONE CAKE have the capability of determining altitude data out to a maximum range of 180 NM and 220 NM respectively. The SIDE NET is estimated to have a capability out to the radar line-of-sight horizon at aircraft altitude. Ground clutter and terrain masking may render these radars ineffective at low altitude (below 500 feet) over land and rough water.

All the height finder radars are concentrated in a narrow frequency range in the S-band which makes these radars susceptible to jamming. SPONGE CAKE and SIDE NET are estimated to have HTI.

1.3.3 **GROUND CONTROLLED INTERCEPT RADAR:** A GCI capability was first achieved using the V-beam TOKEN type radars. These relatively limited sets are now being superseded by the more accurate EM/HF combinations for this operation. Although TOKEN, SLANT MESH, BIG BAR, and BIG MESH are independently capable of providing the three dimensional positioning needed for fighter control, the inherent weaknesses of the V-beam radars in height finding may be overcome in important locations by placing an HF radar nearby.

EM/HF combinations are appearing at the more important RUSSIAN GCI "primary sites". The ★ colocated of an HF and EM radar may not necessarily determine a GCI capability at the site, but such a capability will be given to EM/HF combinations in this publication. Considering ★ range and degree of sophistication, BAR LOCK/SPONGE CAKE and TALL KING/SIDE NET are the most important combinations.

The CHICOMS have received from the U.S.S.R. the TOKEN and BIGMESH V-beam radars which are often colocated with a ROCK CAKE height finder for improved GCI capability. ROCK CAKE height finders may be used with an EM radar for GCI coverage.

NORTH KOREA's entire GCI capability is provided by TOKEN.

DISPOSITION OF GCI RADARS: The Soviets provide important industrial and military areas with dense GCI radar coverage; elsewhere they maintain a relatively dispersed radar coverage.

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Most of the Soviet coast has continuous overlapping coverage against high altitude aircraft. The CHICOMs have deployed a V-beam radar at, or in the close vicinity of, most of their airfields supporting interceptors. They have also placed one or more GCI sites near important industrial and population areas. In other areas the deployment of GCI sites is sparse, but is adequate to permit overlapping coverage along the entire coast of the CHINESE mainland. NORTH KOREA has deployed TOKENs in such fashion as to provide coverage along the periphery of the country. The graphics in Part IV of this study may be consulted for current radar order-of-battle information.

CAPABILITIES AND LIMITATIONS OF GCI RADARS: It is unlikely that a low flying aircraft (below 200 feet) will be tracked continuously by an individual site; however, sporadic tracking may occur where more than one site can cover the attack. Ground clutter and terrain masking make aircraft radar tracking and GCI extremely difficult at such an altitude. It is unlikely that attacking aircraft flying inland at altitudes below 500 feet will be adequately tracked for GCI control of interceptors.

At medium to high altitudes, the following summarizes the Bloc's capability:

- a. The average Soviet GCI capability against medium to high altitude targets (30,000 to 100,000 feet) of the A-38 reflective area is approximately 200 NM. The TALL KING/SIDE NET combination may have a GCI capability out to the radar line-of-sight horizon.
- b. The average CHICOM GCI capability against medium to high altitude targets would be 110 NM provided by TOKEN or 158 NM provided by BIG BUSH. It is doubtful that the CHICOMs would attempt to engage a target at ranges in excess of 125 NM from the coast.
- c. The NORTH KOREAN GCI capability does not exceed the 110 NM GCI range of TOKEN radars.
- d. ROCK CAKE and STONE CAKE, the most common height finders in the Far East, have the capability of determining altitude data out to a maximum range of 180 NM and 220 NM respectively up to the maximum altitudes of all operational aircraft.
- e. Lack of satisfactory high altitude height-finding information in areas where ROCK CAKE/STONE CAKE/SPONG CAKE/SIDE NET have not been deployed is a weakness of the GCI system. Table 1 in Part IV of this study contains performance parameters for the GCI radars used in the Far East.

1.3.4 ACQUISITION AND FIRE CONTROL RADARS. The radars commonly used for acquisition in the Soviet Bloc countries in the Far East are: KNIFEFEET, CROSS FORK, SPOONFEET and FLAT FACE. The characteristics of KNIFEFEET, SPOONFEET, and FLAT FACE are discussed under EW and Surveillance radars (Paragraph 1.3.1) since this is the primary function of these radars. CROSS FORK, a low powered and short-ranged radar operating in the VHF frequency range, is the Soviet version of the U.S. SCR-602. It is used primarily for AAA acquisition, but may be used as a EW gap filler. The Soviet Bloc inventory of fire control radars consists of WHIFF, FIRE CAN, TRACK DISH, and FIRE WHEEL; all of which operate in the S-band. WHIFF is a Soviet copy of the U.S. SCR-584 which has a search/track range of 64 NM/22 NM respectively. FIRE CAN utilizes any one of four fixed frequencies from 2850 to 3040 megacycles, but a thirty to forty minute time period is required to change the tubes in order to alter frequencies. Its search/track range is estimated to be 43 NM/23 NM respectively. FIRE WHEEL, a newer fire control radar, has a search/track range 70 NM/35 NM. FIRE CAN and FIRE WHEEL are estimated to have MIT.

FAN SONG is the guidance radar used with the SA-2 Surface-to-Air Missile system. There are two versions of the FAN SONG -- one operating in the S-band and one in the C-band. The S-band set is the earlier model and was deployed extensively with the initial rapid deployment of the SA-2 missiles. The C-band is now replacing the S-band FAN SONG at many sites and complementing the S-band set at many other sites.

The C-band FAN SONG is a development of the S-band model, and although its physical appearance is similar, its electronic modification has resulted in an increased range capability to 33 NM against a 1 square meter target, and a frequency diversity which will dilute the jamming capability of attacking aircraft. Another improvement in the C-band model is the narrower beam shape which will improve its low altitude performance without major site modifications.

Since many of the Soviet radars operate in the S-band, the deployment of the C-band will reduce the problem of interference from nearby radars operating at the same frequency. The command guidance signal associated with FAN SONG operates in the 700-800 megacycles frequency range.

It is estimated that up to three missiles could be controlled simultaneously by each FAN SONG.

CAPABILITIES AND LIMITATIONS OF ACQUISITION AND FC RADARS: The CROSS FORK and KNIFEFEET acquisition radars are of rather unsophisticated design, but should perform satisfactorily against aircraft above 1,000 to 2,000 feet. Below this, the performance of these equipments is considered poor. FLAT FACE, designed primarily for low altitude coverage, should be able to detect targets down to 100-200 feet out to the line-of-sight ranges.

FAN SONG radar is estimated to be capable of tracking at altitudes down to 1500-2000 feet; however, terrain features and other obstructions around the SAM sites may limit this low altitude capability. FIRE CAN and FIRE WHEEL have a good low altitude capability down to 3000 feet. Their capability decreases rapidly from 3000 to 1000 feet and does not exist below 1000 feet.

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DISPOSITION OF ACQUISITION AND FC RADARS: The Soviets have all of the above radars, except the FIRE WHEEL, deployed in the Far East.

The radars supplied to the CHICONS by the Soviet Union are the WHIFF, FIRE CAN, FIRE WHEEL, FAN SONG for tracking, and the KNIFEREST, CROSS FORK, DUMBO, FLAT FACE, and some TOKENS for target acquisition. They also utilize the BEAM TRACK -- a searchlight control radar -- for tracking low flying targets.

NORTH KOREA has been equipped with WHIFF, FIRE CAN and BEAM TRACK for tracking, and KNIFEREST and some TOKENS for target acquisition.

The graphics in Part IV of this study contain the AAA order-of-battle in the Far East and the confirmed acquisition and fire control radar.

1.3.5 AIRBORNE AID-TO-INTERCEPT RADAR. The currently operational AAI radars are not estimated to have MTI. Because of this, the Soviet AAI radar effectiveness is poor against targets flying below 3,000 feet. The Airborne Aid-to-Intercept radars discussed below are installed in the Soviet Bloc interceptors in the Far East. In Part IV of this study Table I gives specifics of the AAI radars, and Table II shows the radars to be expected in the various Soviet fighters.

a. SCAN FIX - This is the only S-band radar installed in Soviet interceptors. It is a range-only radar having a maximum range of about 3 NM.

b. SCAN ODD - This is an X-band search/track radar. Its search/track ranges are 5 NM/ 3 NM respectively.

c. SCAN ODD (modified) - A modification of the SCAN ODD antenna which has resulted in an increased search/track range to 8 NM/ 6 NM respectively.

d. SCAN THREE - An X-band search/track radar having ranges of 12-16NM/8-16 NM respectively. Both search and track modes operate simultaneously resulting in a track-while-scan capability.

e. SCAN CAN - An X-band radar specifically designed for use with beam rider air-to-air missiles. Its search/track range is 8NM/6NM respectively.

f. SPIN CAN - An X-band search/track radar having a range of 10NM for search and 7NM for track.

g. HIGH FIX - This is an X-band version of SCAN CAN and is a range-only radar with a maximum range of 3 NM. It is installed in certain of the newer high performance aircraft.

1.3.6 IDENTIFICATION FRIEND-OR-FOE (IFF) can be used to extend the effective range of GCI radars by assisting the GCI controller in distinguishing between his fighters and the attack aircraft, not to mention the normal IFF use in classification of friendly and enemy aircraft.

The Soviets have three operational IFF systems. The oldest of the three is the SRO system consisting of the FISNET ground interrogator and the SRO airborne transponder. It operates in the 157-187 megacycle range. This system will be replaced by the newer L-band systems when normal attrition puts the MIG-15 and MIG-17 out of service.

The newer SRO-2 system, consisting of the SCORE BOARD and possibly other ground interrogators and the SRO-2 airborne transponder, operates in the 660-688 megacycle range (L-band). The SCORE BOARD ground interrogator is often synchronized with FLAT FACE, TALL KING and SPOON-REST radars.

The latest IFF system, not yet named, operates in the L-band. Little information is available on this system.

The CHINESE Communists are known to possess the L-band IFF equipment; however, the extent of L-band utilization is not fully known.

The NORTH KOREANS still employ the FISNET interrogator and the SRO airborne transmitter system.

1.3.7 AIR DEFENSE COMMUNICATIONS. Communications play a vital part in coordination, reporting, controlling, and administration within the Sino-Soviet air defense system. The concepts used in Sino-Soviet communications are much the same in all Bloc countries, but differ in state of development. With the high speeds of aircraft and missiles, and the multitude of components involved in air defenses, an automatic data processing capability is necessary to control a modern air defense system effectively. Although the Soviet Bloc is believed to have a capability for semi-automatic handling of air defense data within the air defense sector, it is estimated that in the Far East the new high speed data-transmission system (SADS) is operational only in the Vladivostok area. In other areas the majority of data handling is manual and varies little from methods used during World War II. The primary limitation of the manual system is its low raid-handling capability caused by the excessive time delay in passing data from the EW sites through the operational chain-of-command.

To understand how communications affect Sino-Soviet air defenses, the command structure of the defensive system must be investigated. Figure 1 shows the command organization which exists in the Soviet Union and Communist China.

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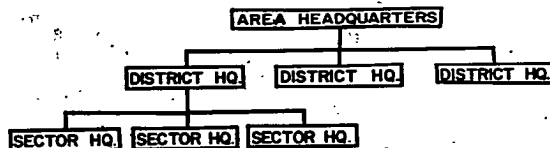


Figure 1: AIR DEFENSE ORGANIZATION

North Korea and North Vietnam each comprise one defense district. The number of sectors in each district varies with the size and importance of the district. Paragraph 1.2.1 explains the operating techniques of these units and indicate the need for communications to pass data between the various headquarters and components.

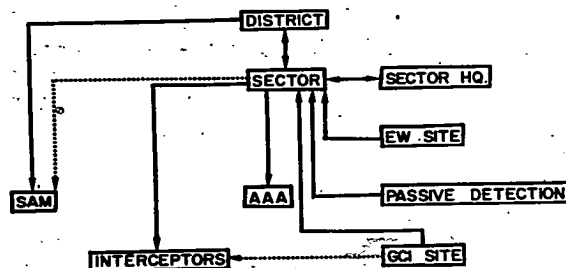


Figure 2: FLOW OF AIR DEFENSE COMMUNICATIONS

The passage of information at the local level is indicated in figure 2. The EW site and/or passive detection equipment detects the target and passes information through filter centers to the Sector Headquarters. Here the information is plotted and the approaching aircraft is identified. If the "BOGEY" is determined to be unfriendly, command information is sent to the AAA, SAM, or Interceptor units that will be involved in the destruction of the attacking aircraft. Information is also passed to the district headquarters and adjacent sector headquarters that might be involved in the intercept problem.

The present communications facilities employed consist of: high frequency radio-morse, teleprinter, and voice; landlines for voice and teleprinter; and microwave relay for voice and teleprinter. The loss of key landlines communications centers would greatly reduce circuit capability and seriously degrade the Soviet air defense capability. This is one explanation for the Soviet retention and expansion of their HF radio facilities. Fixed landlines and microwave systems are more vulnerable to attack. The loss of a telephone center or a repeater station can cause the communications in a whole area to fail and a long period of time would be required to restore service. HF is capable of bypassing a lost station and establishing contact with another center.

The air-to-ground and ground-to-air communications is another serious weakness of Bloc communications. The older interceptors are equipped with a four-channel VHF communication set, and this places a serious limit on the number of interceptors that can be controlled effectively at one time. The Soviets recognize this weakness, and have developed a six-channel VHF set which is installed in newer FARMER, FITTER, FISHPOT and FISHBED aircraft. There are indications that the FLASHLIGHT has two four-channel sets.

The CHICKENS depend upon the U.S.S.R. and its European satellites for much of their communications equipment and have not achieved a completely adequate communications network for defensive purposes.

North Korea has a fair communications network consisting of radio-morse, teletype, and voice communications between defense elements.

CAPABILITIES AND LIMITATIONS OF AIR DEFENSE COMMUNICATIONS: Inadequate ground-to-air and ground-to-ground communications in outlying areas are serious weaknesses of the Sino-Soviet air defense system. Communication links will probably become overloaded if large numbers of inbound strikes reach GCI range simultaneously.

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The present VHF ground-to-air communication system is a limiting factor of raid-handling capability. Because of the limitations of this system, it is estimated that a maximum of five or six simultaneous intercepts will be the limit for a single control center. SADS, however, is expected to be capable of accommodating a maximum of 100 tracks (50 targets and 50 interceptors) simultaneously.

1.3.8 ACTIVE ELECTRONIC COUNTERMEASURES. The Russians are known to employ ground-based jamming equipment in all frequency ranges from HF up to 10,000 megacycles. They are thought to have the capability of causing scope saturation on Western bomb/nav radars within a 50 NM radius of the jammer. No specific locations have been reported for these equipments; however, active jamming should be expected near major targets. The CHICONS are also capable of jamming HF through S-band, and possibly X-band equipment, but it is estimated that they do not have an effective ground-based jammer for countering bomb/nav radars. They have used decoy radio beacons (SPOOFER BEACONS) against Western aircraft in the past and will undoubtedly continue to do so.

1.3.9 PASSIVE DETECTION. The Soviets are known to employ passive detection equipments covering the HF, VHF, UHF, S-band, and X-band frequencies; infrared detection equipment is also thought to be employed, particularly along the coast approaches to targets. All of the passive detection equipments are integrated into the air defense system.

The CHICONS and NORTH KOREANS also have passive detection equipment to supplement their EW radar system, but the location of these devices, which are highly mobile, is unknown.

1.4 EARLY WARNING RADAR PICKET SHIPS.

The Soviets have converted six T-43 class minesweepers for picket ship duty by adding KNIFEREST or BIG NET EW radars and passive ECM and IFF equipment. These pickets are apparently being used as Fleet units; however, in the event of hostilities they could be used to extend the EW radar horizon in important areas.

The CHICONS may have similar equipment deployed, but only one patrol escort has been confirmed to have an EW radar installed.

1.5 FIGHTER AIRCRAFT.

PERFORMANCE. The Communist Bloc fighter aircraft in the Far East, ranging from the FAGOT to the high speed all-weather FISHPOT, possess very good performance characteristics. It is beyond the scope of this publication to go into lengthy details of each aircraft's capabilities. Instead, a tabulated listing of the fighter characteristics of concern to attack pilots is included in Table II, page 4.3, of this publication. Additional information is available in AFSC's *Technical Characteristics and Performance Handbook*. Detailed studies have been published in various AFSC and ATIC publications.

ARMAMENT. Widespread use of guns in Sino-Soviet fighters indicates a necessity for lead-pursuit tactics. Most Bloc fighters will require visual contact prior to opening fire. This places a definite limitation on intercept during poor visibility conditions. Recent sightings have confirmed an operational status for air-to-air missiles (AAM). These have been observed carried as external stores. Table II lists armament-fighter combinations to be expected and certain performance factors for gun and AAM armament. Although the CHICONS and NORTH KOREANS possess interceptors capable of carrying AAM, there have been no confirmed reports to indicate that they have received these weapons from the U.S.S.R.

DISPOSITION OF FIGHTERS: There are approximately 800 jet fighters in the Soviet Far East. Of these, roughly 167 have a limited all-weather capability and 63 are fully all-weather.

The CHINESE have on the order of 2000 fighters with approximately 7% of these having a limited all-weather capability.

The NORTH KOREANS have about 300 fighters of which approximately 3% have a limited all-weather capability.

Part IV of this study contains plots of the airfields supporting jet interceptors with the number and types of interceptors located on each field.

CAPABILITIES AND LIMITATIONS OF FIGHTER INTERCEPTORS: Generally speaking, the Communist Bloc countries in the Far East have abundant clear-air-day fighters. The best operating capability of these aircraft exists between 5,000 and 45,000 feet. Below 1,000 feet, their interceptors will be least effective for the following reasons:

a. It is difficult for GCI radars to track a target continuously below 1,000 feet over land or rough water and they are ineffective below 200 feet. It is doubtful that an aircraft below 500 feet could be tracked adequately for GCI control of interceptors.

b. AAI radars are ineffective below 1,000 feet due to ground clutter and terrain masking.

c. Without GCI assistance it is difficult to acquire a target visually at low altitudes.

During periods of darkness or poor visibility, the insufficient number of all-weather interceptors limits the effectiveness of the entire air defense system.

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1.6 ANTI-AIRCRAFT ARTILLERY (AAA).

The significance of AAA in the Sino-Soviet Bloc rests in the fact that AAA together with fighter aircraft operating under LOOSE CONTROL is the chief defense against low-level attack. The importance of AAA will undoubtedly decrease as the new SA-3 surface-to-air missile for use against low-flying attackers is deployed extensively.

DISPOSITION OF AAA: Generally, AAA is deployed in such a manner as to concentrate large numbers in a circular pattern around major cities, industrial complexes, and military installations. The Soviets are known to have nearly 3,000 AAA weapons of all types deployed in the Far East. The CHINESE and NORTH KOREANS operate about 3,500 more. Disposition information appears in the AFIC report AAA Order of Battle Communist Forces, Far East, and in Part IV of this study. The high mobility of the light weapons precludes an accurate order-of-battle or deployment estimate.

CAPABILITIES AND LIMITATIONS OF AAA: Medium and heavy fire-controlled AAA is effective between 2,000 and 45,000 feet, but below 3,000 feet, its effectiveness decreases rapidly. Below 500 feet only barrage firing has any capability of destroying the target. It has been calculated that a 100 mm anti-aircraft gun firing 10 rounds against an A3 at 30,000 feet has an 8% probability of kill. In a 20 second engagement, 85 rounds can be fired by a 100 mm battery, and the kill probability rises to 60%. Any decrease in altitude will increase this kill probability until it reaches a maximum at approximately 4,000 feet. Below this altitude vertical sighting angles limit the length of engagement, drastically reducing effectiveness.

Light anti-aircraft guns, often called automatic weapons, consist of 57 mm and 37 mm anti-aircraft guns and heavy anti-aircraft machine guns. The 37 mm has been largely replaced by the newer 57 mm in the U.S.S.R., but still widely used in the other Asiatic communist countries.

Automatic weapons employed without electronic fire-control devices are the primary AAA threat to low-flying aircraft. These weapons can only be used individually with optical control devices in conditions of good visibility. The effectiveness of weapons employed in this manner is usually determined as a function of the number of rounds fired by an individual weapon during a three or six second engagement. Engagements of this type are limited by vertical angle-of-sight and the ability of the engaging weapon to follow the target at the extreme high relative movement which exists at close range. A target flying at 500 knots and 1,000 feet altitude may be engaged for six seconds by automatic weapons, and a target flying at the same speed at 500 feet may be engaged for three seconds. These engagement times are based on the assumption that detection cannot be accomplished before the angle-of-sight to the target reaches 10 degrees and that the weapons have the capability of following the target at the rotation rate of 30 degrees per second. No engagement is considered possible if the target is within 750 yards of the engaging weapon.

The 57 mm gun has a kill probability of approximately 45% against a 500 knot target at 1,000 feet during a six second engagement. This capability rapidly diminishes to a 2% probability as the target approaches ground level. The low altitude kill probability of the other weapons is less than that of the 57 mm due to their design limitations.

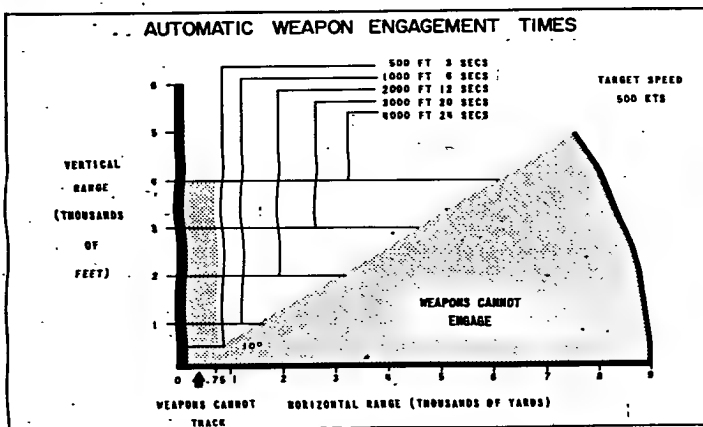


FIGURE 3.

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1.7 GUIDED MISSILES

* 1.7.1 SURFACE-TO-AIR (SAM). Three known surface-to-air missile systems have been developed by the Soviets: The SA-1 system deployed only around Moscow, the SA-2 system deployed throughout the Soviet Union and satellite countries, and the SA-3 system deployed in limited numbers in the Soviet Union. SA-2 sites have been identified in China, principally around Peking, and two sites have been confirmed in North Korea at Pyongyang.

The SA-2 system is rapidly replacing medium and heavy AAA in the Soviet air defenses. Each SA-2 site consists of six revetted launchers arranged in a circular or fan-shaped pattern 500 feet in diameter. At the center of the pattern are vans, also revetted, which contain the Fire-Control radar FAN SONG, a computer, and associated guidance equipment. Surveillance/Acquisition radar, designated SPOORREST, is usually located in the vicinity of the site. The GUIDELINE missile used with this system has a solid booster and a liquid propellant sustainer motor providing an estimated range of 40 nautical miles and a maximum speed of Mach 3.6. The warhead is estimated to weigh 500 pounds, either H.E. or nuclear. Maximum intercept range of the system is on the order of 30 miles. Optimum intercept capability for the system lies between 20,000' and 60,000' feet, with maximum altitude capability estimated to be 100,000 feet. Below 3000 feet the effectiveness of the SA-2 system drops rapidly, and minimum altitude capability may be as low as 1000 feet above terrain, or 300 feet in some cases where sites defend overwater approaches. The SA-2 system is not considered effective against aircraft flying at minimum terrain clearance altitudes.

The SA-3 system has been confirmed in the Soviet Far East since the summer of 1962. To date, four sites have been identified at Vladivostok, and three sites at Ussuriysk. Original evaluation of SA-3 capability assigned a very low altitude intercept capability to the SA-3 system. This evaluation was based on intelligence derived from observation of the missile development and test facilities and on the obvious need of the Soviets for a low altitude capable system. Deployment patterns and site locations in some instances do not appear compatible with the characteristics ascribed to a relatively short-range, extremely low-altitude capable system; however no firm intelligence pertaining to SA-3 system components is available to date. The present estimate of SA-3 system capabilities is listed and will be modified as more intelligence becomes available.

Two SAM sites which do not appear to be either SA-1, 2, or 3 have been established at Petropavlovsk and Kormaysk. For the present these sites are being carried in a general SAM category.

CAPABILITIES OF THE SA-2 SURFACE-TO-AIR MISSILE

RANGE: Maximum intercept range of 30NM at 55,000'. Range decreases with an increase or decrease in altitude, resulting in a range of 10-15 NM at 2,000'.
SPEED: Maximum speed is approximately Mach 3.6.
ALTITUDE: Maximum altitude capability is approximately 60,000' with a limited effectiveness to 100,000'. Minimum altitude coverage may be as low as 1,000' under ideal siting conditions.
WARHEAD: 500 pound high explosive or nuclear.
EFFECTIVENESS: Not effective against low-flying aircraft and has only limited effectiveness against small targets. It is estimated to have a CEP of 110 feet at 25 NM range against a B-52 at 45,000 feet.

ESTIMATED CAPABILITIES OF THE SA-3 SURFACE-TO-AIR MISSILE

Very little information is available on the SA-3. On the basis of the information obtained on this missile system, the following estimated capabilities are derived:

RANGE: Maximum range of 12-15 NM.
SPEED: Approximately Mach 2-3.
ALTITUDE: From a low altitude of 50-100 feet to a maximum of 40,000 feet.
WARHEAD: High explosive.
GUIDANCE SYSTEM: Continuous wave doppler radar for tracking and a homing guidance system in the terminal phase of intercept. The tracking radar antenna will be composed of two parabolic reflectors mounted on a tower.

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The following photograph shows a typical SA-2 SAM site. The positioning of the missile launchers in a circular pattern is typical of all SA-2 SAM sites, however variations in the road network will cause variations in the appearance of these sites.

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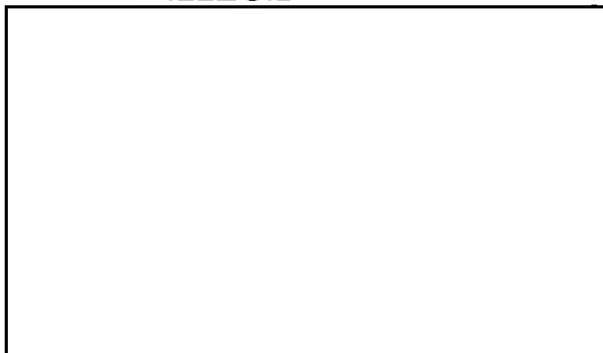


FIGURE 4:
SA-2 SAM SITE UNDER CONSTRUCTION

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FIGURE 5:
TYPICAL OPERATIONAL SA-2 SAM SITE

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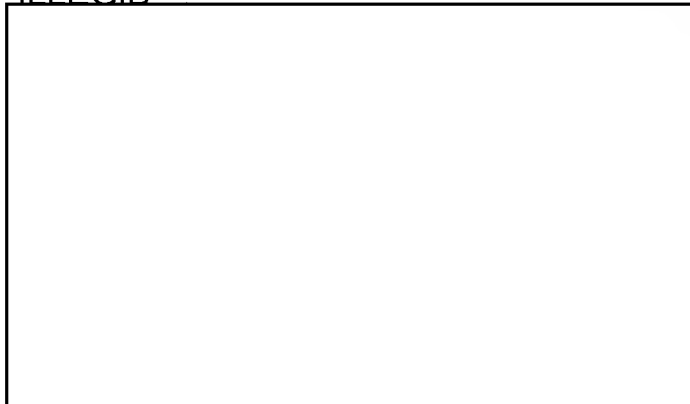


FIGURE 6: SA-3 SITE PHOTOGRAPHED AT ODESSA

An SA-3 site at Odessa was recently photographed from low altitude. Preliminary analysis indicates that the site is occupied. The launch pads, guidance area and probable hold area are revetted, and each seems to contain equipment. One piece of equipment in the guidance area appears somewhat higher than the surrounding revetment and could be the SA-3 guidance radar.

The SA-3 is the third generation Soviet SAM system. Deployment within the USSR was first discerned in 1961, and 47 sites are now believed to be established. Available data are insufficient to permit determination of characteristics or performance capabilities, but the system is probably designed to provide improved defense capabilities at low altitude.

Analysis of the missile guidance radar observed at Odessa indicates that it possibly operates on the track-while-scan principle used in earlier Soviet SAM systems. If this analysis is valid, the SA-3 system may not be the very low altitude now estimated. However, the meager quantity of pertinent intelligence could be misleading.

In view of the obvious Soviet need for an extreme low altitude defense, and the lack of any indication a new SAM system except the SA-3 is being developed or deployed, the present estimate as carried in the SSADFE must be considered valid for the present.

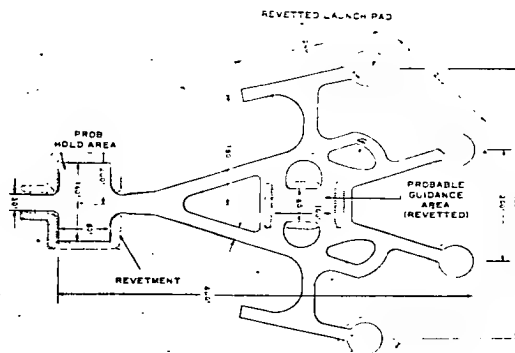


FIGURE 7: TYPICAL SA-3 SITE LAYOUT

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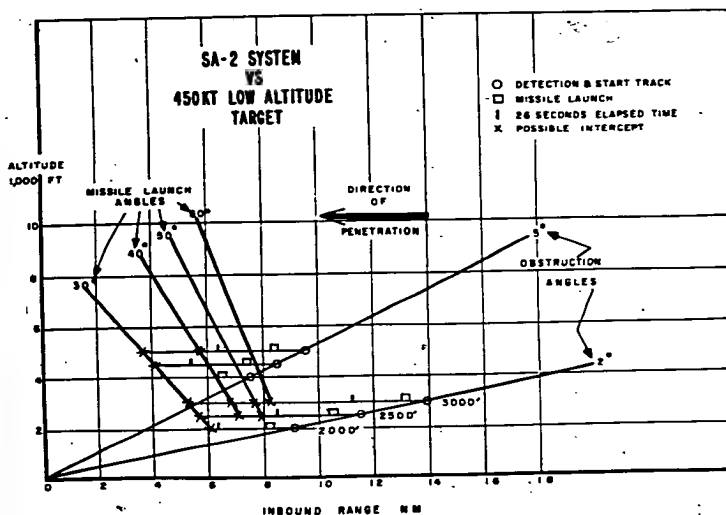
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★ 1.7.2 SA-2 LOW ALTITUDE CAPABILITY: The SA-2 system was designed to be most effective in the medium to high altitude ranges. This system, though not designed for low altitude, has some capability against low altitude penetrators. However, it does not appear that most sites have been ideally located for optimum low altitude defense. Cultural and terrain masking occurs to a large extent at a number of sites with elevation obstruction angles of ten degrees or larger in some directions. The capability of the FAN SONG guidance radar to track low altitude targets accurately is a complex problem and varies with each site. Under ideal siting conditions, such as overlooking an overwater approach or very flat wooded terrain, tracking may be possible to altitudes as low as 500 feet. However, when masking does occur, and this is the usual case, tracking is not possible below the obstruction angle. This is a basic weakness of the system as deployed.

In discussing the SA-2 low altitude capability, the alert status of the unit, and the timeliness and amount of early-warning information are significant factors. Assuming the worst possible case for the attacker, the SA-2 site will have early-warning information from early warning and acquisition radars, the site will be fully alerted and manned, and the guidance radar will be slewed in the general direction of the target.

A graphic presentation of the missile intercept capability, based on these assumptions, for a target traveling at 450 knots in a clear electronic environment is shown in figure 8. The target is flying a course that will pass directly over the site. Obstruction angles of two and five degrees have been superimposed to show relative position of pickup of the target by the guidance radar FAN SONG. Due to the closeness of the target to the site, the radar reflective area of the target plays no part in the radar detection capability of the FAN SONG. The intercept capability of the SA-2 is based on the velocity of the target, the time required for the system to lock on, track the target, launch the missile and the missile flight time to the intercept point. The elapsed time for the system firing sequence is approximately 26 seconds, which becomes a limiting factor as the target approaches at the lower altitudes, as shown in Figure 8. Launch angles from 30 degrees to 60 degrees are shown as straight lines with X's indicating possible intercept points. From the figure it can be seen that below 2,000 feet for a 2 degree obstruction angle, or 4,000 feet for a 5 degree obstruction angle, the system has no intercept capability. In addition to the obstruction angle limitations a 4.2 NM hemispherical radar and missile dead zone exists around each SA-2 site.



★ FIGURE 8: SA-2 SYSTEM VS 450KT LOW ALTITUDE TARGET

DEPLOYMENT OF SURFACE-TO-AIR MISSILES: See page 4.5 and 4.6 for location of all confirmed SA-2, SA-3, and general SAM sites in the Far East.

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*1.7.3 AIR-TO-AIR (AAM): The Soviets have designed several of their new generation interceptors around, and have backfitted some of their older interceptors with AAM's. Although the CHICOMS and NORTH KOREANS possess aircraft capable of carrying AAM's, they are not estimated to have AAM's at the present time. They will probably rely upon the U.S.S.R. for their future AAM capability.

The following are the currently operational AAM's compatible with the jet interceptors located in the Far East:

a. AA-1 (ALKALI): This is a beam-rider missile. Although SPIN CAN, SCAN THREE, SCAN ODD and SCAN AAI radars can be utilized for beam-rider missiles, the AA-1 has been observed only on the FARMER E and the FISHPOT B which are equipped with SCAN CAN and SPIN CAN radars respectively. The launch aircraft is limited to a lead pursuit tail attack against maneuvering targets. At altitudes below 10,000 feet, the missile must be launched within a 45° angle of the flight path of the target. The FARMER E must be within 2 NM and the FISHPOT B must be within 3.5 - 4.0 NM of the target. The pitch-up capability of the AA-1 is limited at all altitudes and non-existent above 50,000 feet.

This system is vulnerable to countermeasures in the guidance radar and the missile guidance receiver. When possible, the radar should be jammed to prevent or delay detection. If detected, track breaking techniques should be used.

b. AA-2 (ATOLL): This is an infrared homing missile having a maximum range of 5.5 NM with a CEP of 10-15 feet and a velocity of Mach 2.0 plus the speed of the launch aircraft. Its use is limited to clear-air conditions. The launch aircraft must be in a lead pursuit attack with a maximum of 2 G's at time of launch. The AA-2 is most effective at high launch altitudes due to the lower air density. It has been observed on the FISHBED C, but may be used with most interceptors.

c. AA-3 (ANAB): This is a semi-active radar homing missile having a maximum range of 7-13 NM with a CEP of 15-20 feet. Its launching aircraft must be equipped with a search radar operating in the X-band and must launch the missile in a lead pursuit attack. The FISHPOT B has been observed carrying this weapon.

For fighter aircraft and AAM compatibility, refer to Table II in Part IV of this study.

1.8 TACTICAL CONSIDERATION.

The following summarizes the important factors of the Sino-Soviet Bloc air defense system to be considered in attack mission planning.

1.8.1 DETECTION AND TRACKING. The Sino-Soviet Bloc has the capability of detecting aircraft at long ranges and at high altitudes (out to 150-220 NM ranges and above 20,000 feet), but their low-level detection and tracking capability is considered to be a major weakness. It is unlikely that a low-flying aircraft (below 200 feet) will be tracked continuously by an individual site; furthermore, it is unlikely that the GCI system as a whole has adequate tracking capability of attacking aircraft below 500 feet for the GCI control of interceptors. Ground clutter and terrain masking make tracking by pulsed radars extremely difficult at low altitudes; therefore, the attacker gains significant advantage by penetrating at very low altitudes.

For planning purposes, however, detection and tracking should be estimated at or slightly beyond the radar horizon for flight altitude. Where fuel reserves provide latitude in selection of a penetration route, the attacker should select a route where radar range and/or concentration is least.

1.8.2 ANTI-AIRCRAFT ARTILLERY. Medium and heavy fire-controlled AAA is effective between 2,000 and 45,000 feet, but below 3,000 feet its effectiveness rapidly decreases, and below 500 feet, only barrage-firing has any capability to destroy the target. The 57 mm gun in USSR and the 37-mm gun in NORTH KOREA and CHINA are the most serious threats against low-flying aircraft.

1.8.3 SURFACE-TO-AIR MISSILES. The SA-2 SAM system, operational in the Far East, was designed for high altitude targets up to 100,000 feet with optimum design altitudes between 20,000 and 40,000 feet. Its estimated minimum altitude capability is 1,000 to 3,000 feet, depending upon siting condition. To take advantage of the limitations of the SA-2 SAM system, an attacker who is forced to pass within the vicinity of an SA-2 site should choose an altitude below 500 feet and/or should take advantage of terrain features which would obscure coverage by the FAN SONG radar.

Until more information becomes available on the new SA-3 missile system, the best recommendation is to avoid SA-3 sites by 12-15 miles which is estimated to be its maximum range.

1.8.4 INTERCEPTORS. The Soviets and their satellites have an abundance of clear-air-day-fighters with an optimum operating capability at altitudes between 5,000 and 45,000 feet. This area of optimum capability must be avoided by attacking aircraft or severe attrition may result. The Soviet interceptors are relatively ineffective below 1,000 feet and are estimated to be completely ineffective below 200 feet.

The all-weather interceptors would experience extreme difficulty in being vectored to attacking aircraft by GCI sites when the attacker is below 500 feet, and their AAI radars which are not equipped with MTI would be ineffective below 1,000 feet.

Since the enemy's ability to eliminate the attacker as a threat falls radically when the attacker is over land, the time between detection and landfall should be reduced, whenever possible, to the reaction time of the air defense system required to launch interceptors.

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1.8.5 COMMUNICATIONS. Another weakness in the air defense system of the Sino-Soviet Bloc is poor communications. Communications limit each control center to a maximum of 5-6 raids; however, the SADS which is already operational around Vladivostok will raise this limit. Communication facilities existing outside major complexes may be saturated by a few attacks occurring simultaneously. Course, speed, and altitude changes at random intervals by a relatively small number of incoming raids should overload the circuits.

1.8.6 ELECTRONIC COUNTERMEASURES. The communist countries in the Far East have excellent passive detection capabilities; hence, all electromagnetic radiating equipment should be used sparingly--preferably not at all.

Many of their radars are susceptible to jamming, since they operate in narrow frequency ranges and are not equipped with ECM devices. The ECM equipment now being deployed to the Fleet will take advantage of this weakness.

1.9 NORTH VIETNAM AIR DEFENSES.

The Air Defenses of North Vietnam consist primarily of a sizeable Anti-Aircraft Artillery force, augmented by an Early Warning Network consisting of Radar and Visual Observers.

The AAA Force, a component of the North Vietnam People's Army (VPA), is equipped with Soviet equipment and equipment captured from the French. This force received experience against the French, and is considered to be effective under combat conditions. North Vietnam AAA units are equipped with 85mm, 88mm, 76mm, 37mm guns, and 12.7 mm machine guns of WW II vintage, but considered to be in good operating condition. Sufficient WHIFF and FIRE CAP fire control radar has been located in North Vietnam by ELINT to indicate some medium AAA is radar controlled.

Jet aircraft operations have not been observed in North Vietnam. Presently North Vietnam has some propeller driven training aircraft and some transport type aircraft. Haiphong/Cat Bi, Hanoi Gia Lam, and Haiphong Kien An are capable of supporting sustained jet fighter operations. However, there is no GCI in North Vietnam at present due to lack of height finding radar.

Early Warning coverage for North Vietnam is provided by Soviet built RUS and KNIFEREST Radars, and Chinese supplied SCR-270 and one CROSS-SLOT. The serious deficiencies in low altitude, and long range coverage of the RUS and KNIFEREST radars are overcome by the capabilities of the SCR-270. However, state of operator training, lack of trained maintenance technicians, and poor communications contributes to a lesser capability in Early Warning detection than the Communist Chinese possess.

The Air Defense District Headquarters at Hanoi ties together the existing air warning net of deployed radars with the AAA forces. It is probable that North Vietnam is tied into the air defense of Communist China through a communications link between Hanoi and South China.

Aircraft flying at altitude over the Gulf of Tonkin will probably be tracked continuously by the Communist South China Radar Net and sporadically by the North Vietnam Radar Net. Aircraft flying below 4000 feet may be tracked by Chinese Radars if above the radar horizon, but will probably not be detected by the North Vietnam radars. Ground observer posts will possibly detect aircraft flying along the North Vietnam coastline, but are limited by lack of modern communications. Aircraft flying at low altitude over land areas of North Vietnam will not be tracked by the radar net.

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PART II

RADAR HORIZON NOMOGRAM

2.0 DESCRIPTION AND EXPLANATORY INFORMATION

2.0.1 THE RADAR HORIZON. The theoretical maximum range in free space of a lossless radar system is determined by its pulse repetition rate. For targets near the surface of the earth, however, maximum radar range is limited by the earth's curvature. This limit is a function of the radar site height, target height, and a corrective factor for atmospheric refraction. The governing equation is derived easily using simple mathematics and an earth having a radius $4/3$ its actual measurement to allow for refraction:

$$(1) R = 1.23 \left(\sqrt{h_1} + \sqrt{h_2} \right) \text{ nautical miles}$$

wherein h_1 is the height of the radiating antenna in feet, and h_2 is the altitude of the target in feet. The limiting range produced by this equation is known as the radar horizon. The radar horizon is a theoretical limit. If atmospheric conditions are such that the phenomenon of ducting occurs, targets can be seen which lie beyond the radar horizon. Furthermore, ground or sea return may mask a target which is well within the radar horizon. In spite of these defects, though, the concept is quite useful, and the radar horizon should be considered the locus of possible detection points, where radar power is of no concern.

As can be seen from equation (1), the radar horizon is independent of the type, power, or sophistication of the generating radar. It is dependent solely upon the elevations of the radar and target. At long ranges, and high altitudes, the radar horizon range may exceed the effective range of low-powered radars by many miles. In such cases it is of significant interest to attack planners to determine a new locus of probable detection positions by supplementing radar horizon information with radar power estimates. These high altitude loci are generated by using the radar horizon or the effective range of the radar, whichever is less. Due to the nature of current attack techniques, this publication does not contain high altitude estimates. Low altitude horizons are unaffected by power considerations, since all Sino-Soviet radars are sufficiently powerful to reach the required distance.

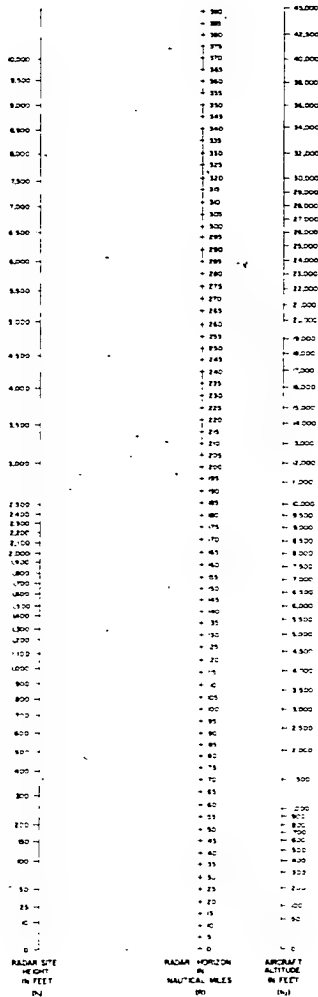
2.0.2 NOMOGRAM CONSTRUCTION. A considerable reduction in the time required for solution of equation (1) can be realized by using the following technique: If a problem is governed by an equation of the form $F(x, y, z) = 0$, where $F(x, y, z)$ is a function of three variables x , y , and z , at least one of which is a dependent variable, it is possible to construct an alignment chart or nomogram if the governing equation is of the form: $f_1(x) = f_2(y) + f_3(z)$. It will be noted that equation (1) satisfies the mathematical requirements and that nomogram representation is therefore possible. Details of construction can be found in any standard mathematical handbook. The Radar Horizon Nomogram which was constructed using this technique has been numbered "page 2.2" Reproduction of this page in its entirety is permitted at the CONFIDENTIAL level. Removal of the column identifiers and page title permits reproduction as unclassified material.

2.0.3 NOMOGRAM USE. Part IV of this publication contains JN charts which have been over-printed with radar horizons for the myriad radars which dot the Pacific Coast of the Sino-Soviet Bloc. These horizons have been developed for aircraft altitudes requested by the Fleet: the 50 foot horizon was included to satisfy Attack Squadron requirements; the 2,000 foot horizon was suggested by Patrol Squadrons. If, for some reason, it is desired to construct a radar horizon for some other altitude, this may be accomplished through use of the nomogram. It is also suggested that AI's determine what changes newly acquired radar sites make in the existing horizons by using the nomogram.

In using the nomogram it is necessary to know two of the three parameters: radar site height, aircraft altitude, and radar horizon range. With any two of these factors known, the third may be found by simply drawing a line connecting the two known quantities, and reading the third where this line intersects the appropriate scale.

In plotting horizons based upon newly acquired EOB, it is necessary to determine a site height for the radar. Normally the publishing activity will assign a "fix accuracy" or error-in-position for each site reported. Quite often within the fix accuracy stated terrain elevations vary enormously, and, since the choice of a site establishes the elevation of the radar, and therefore the range of the radar horizon, a problem exists. It has been the policy of the Fleet Intelligence Center to choose the most probable location having the highest elevation within the fix accuracy stated. This technique is recommended since all errors are automatically on the high side; and the estimated radar horizon will most probably lie beyond the actual horizon.

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NOMOGRAM FOR FINDING RADAR HORIZONS
 $R = 2.15 (\sqrt{H} + \sqrt{A})$

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PART III

STRIKE PENETRATION AND AAA TEMPLATES

3.0 DISCUSSION OF THE STRIKE PENETRATION TEMPLATE

The Strike Penetration Templates distributed to the Fleet provide a graphic solution for the problem of possible points of interception. The solution is not exact, since templates are constructed for assumed conditions. Under most circumstances the template solution is sufficiently accurate to warrant its use, and moderate familiarity with the assumed conditions will permit mental correction for deviations. Detection position and fighter employment do not enter into construction of the templates, but these factors are essential parts of the overall problem.

3.0.1 PREPARATION PHILOSOPHY. In order to provide an exact graphical solution to the intercept problem, it would be necessary to know the specific conditions that will exist at the time that the mission is flown, or to make an unlimited number of templates covering all possible conditions. Unless assumptions are made to narrow the scope of the problem, solution is impractical.

In making limiting assumptions, errors are automatically introduced into the solutions, since it is highly unlikely that all of the assumed conditions will correspond exactly to the conditions at the time of the mission. It is necessary that the errors introduced be reasonable and "safe"; that is, they will tend to predict intercept earlier than it probably will occur. Safe errors will be tolerated. Unsafe errors will be tolerated only if small, or if no alternative exists.

3.0.2 ASSUMPTIONS. In the paragraphs to follow, the assumptions made, and their effects upon the problem will be discussed.

(a) SCALE. The templates were prepared for use with JN Charts. Since scalar distances vary with latitude on these charts, it is necessary to choose a latitude for measurement purposes. Customarily 40° latitude is used for this purpose. The templates are accurate, then, only at 40°. The error introduced in using the templates at another latitude is small (25NM at 40° will be 25.4NM at 45°, 24.4NM at 35°, 23NM at 30°) and can safely be ignored.

(b) REPRODUCTION. A second scaling error can occur on reproduction. The originals are prepared on linen which are reproduced on ozalid transparencies. Although care is taken to assure 1:1 reproduction, variation from the original can occur. Such variation is small enough to be negligible.

(c) FIGHTER PERFORMANCE. Although attacker performance characteristics are known in each case, fighter performance will depend upon assumptions made concerning configuration and power setting. With these assumed values, it is possible to consult ATIC handbooks for the various fighters and determine values for True Airspeed, Time-to-Climb, and Distance-Traveled-During-Climb. These assumptions are the most significant and difficult associated with the problem. It would be possible to choose one of the MIL SPEC intercept solutions, however none of these solutions falls in line with estimated fighter employment under all-out war situations. These latter estimates predict maximum effort for destruction as far as possible from principal targets. If it is assumed that the fighter is clean and uses maximum power at all times during intercept, any error introduced is SAFE and the interception positions predicted will be maximum range estimates. These assumptions have been adopted for construction of the templates.

(d) GCI CONTROL. The normal ground controlled intercept involves a collision course for the fighter on only part of the intercept. It is basic to solution, however, to assume that the controller directs a collision course throughout the intercept. The error introduced in making this assumption is SAFE, since intercept will occur later than predicted on any other than a collision course.

(e) WIND ERROR. The wind existing at time of attack cannot be forecast. It would be possible to assume a worst-wind condition based upon analysis of available records. This assumption would be in line with the preparation philosophy; however, solutions generated using this assumption would be invalid a greater percentage of the time than would be the case if it were assumed that no-wind conditions exist. If the latter assumption is adopted, an error is introduced which can be quite significant when long range and strong winds are involved. If there is a component of wind which increases the attacker's net ground speed, the error is SAFE. If the attacker's net ground speed is reduced, the error is UNSAFE, and will be a maximum when the attacker is flying directly into the wind, and the interceptor is flying directly downwind. The amount of this error may be found by taking the product of the ratio of wind velocity to closing speed and the initial no-wind intercept distance. The magnitude of the UNSAFE error generated when high winds and long range are involved may be grasped through example: Suppose that there is a 200 knot wind blowing along the intercept path. A FARMER is flying at a true airspeed of 1165 knots directly downwind. An oncoming A3D is flying directly into this wind at a true airspeed of 451 knots. The initial separation is 175 nautical miles. The no-wind estimate will be in error by $(200/1635) (175) = 21.4$ nautical miles. Under normal conditions the low altitude penetrator can expect wind errors of less than 2 nautical miles. In light of the above, a no-wind solution has been made.

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(f) REACTION TIME. The reaction time of a fighter defense net is defined to be that time which elapses from initial detection of a target until an interceptor is scrambled. This delay time is significantly dependant upon state-of-readiness, and system sophistication. CNO's current estimate of this delay time in the Far East is from 6 to 9 minutes. Upon incorporation of the Soviet Semiautomatic Air Defense System (SADS) into the fighter defense net a severe reduction in this reaction time can be expected. In construction of strike penetration templates now in the Fleet, the lesser present capability has been chosen.

3.0.3 OTHER CONSIDERATIONS. Certain intangible factors which are difficult to predict enter into the overall problem of interception position. Chief among these are the probable position of detection and fighter employment techniques.

(a) DETECTION POSITION. The exact position at which detection will occur is not foreseeable by the attacking pilot. Since rigorous solution of this problem is not possible, it is necessary to resort to probabilities and generalities. There are a number of "ifs" involved in the following statement, however it is thought to be the best advice available: As a first order estimate of detection position the low-altitude aviator should use the radar horizon for his altitude. So doing will insert a factor-of-safety in that the odds are nearly four to one that detection will not occur until he is within the horizon. It is necessary for the high-altitude penetrator to make a second order estimate using radar power limitations to reduce radar horizon figures where applicable.

(b) FIGHTER EMPLOYMENT TECHNIQUES. Soviet procedures for the manual (non-data link) control of interceptors do not differ significantly from Western procedures. These techniques may be categorized as: Close Control, Loose Control, Broadcast Control, and Barrier or Combat Air Patrol Control. Under CLOSE CONTROL the CCI controller instructs the pilot as to heading, speed and altitude to fly, relative bearing to the target, time to go, and other necessary data to permit the pilot to detect the target and convert to a firing pass. LOOSE CONTROL is essentially a degraded form of close control under which the controller transmits to airborne interceptors information on enemy forces to include raid number, positions, headings, velocity, and altitude, leaving to the formation leaders the problem of navigation to the target area and effecting contact. BROADCAST CONTROL is a desperation tactic which is a degraded form of loose control. Information broadcasted on the position, velocity, heading or altitude of the threat is of poor to unknown validity, and may be based on nothing more than interpretation of jamming strobes. BARRIER or COMBAT AIR PATROLS are often used by the Soviets to guard specific targets or approaches to targets. Under this technique formations are positioned over reference points and kept in the desired area to await the enemy. This procedure is especially valuable in reducing system reaction time against high speed penetrations. The very high density of Soviet interceptor units in many areas offsets the economical disadvantages of this tactic and permits high utilization of the total force.

With the foregoing summation of techniques in mind, it is easily seen that the Strike Penetration Template solution of intercept position will be invalid for Barrier or Combat Air Patrol types of control, since these techniques involve airborne fighters. It is not possible to predict either the rendezvous points which might be used in conjunction with this control technique or the areas in which the technique might be used with any degree of reliability. As a consequence, it is possible to forewarn the pilot that the template solution may be invalidated due to the presence of airborne fighter barriers, but the exact effect is unpredictable. The formation leader of a barrier patrol is normally (but not necessarily) under close or loose control until the battle is joined. As a result, barrier patrols normally will be placed within 125NM of a ground controller.

3.1 STRIKE PENETRATION TEMPLATE CONSTRUCTION. The purpose of the following paragraphs is to describe Strike Penetration Template construction in sufficient detail to permit Template preparation at the local level.

3.1.1 ESSENTIAL INFORMATION. Prior to attempting construction it is necessary to have available the following information:

- a. An estimate of System Reaction Time. System reaction time is defined in paragraph 3.0.2 (f).
- b. The True-Airspeed, Time-to-Climb, and Distance-Traveled-During-Climb figures for the interceptor aircraft.
- c. The True-Airspeed of the attacking aircraft.

3.1.2 CONSTRUCTION DETAILS. Proceed as follows:

1. Lay off a reference line parallel to the major dimension of a 17"x22" sheet of frosted acetate. Label this line "Attacker's track line". Place an arrow on the left hand extremity of this line to indicate the direction of travel.
2. About 6" from the right-hand end of this line establish a reference point. Label this point zero (0).
3. Compute the distance in nautical miles traveled by the attacker in some convenient time interval (Suggested: 3 minutes). Using a JN chart, at 40°L, for scaling purposes, pick-off this computed distance with dividers. Working both directions from point zero with the dividers, lay off a time-distance scale. Label the points thus established with their associated times. Label times to the right of zero minutes before zero, and times to the left minutes after zero.
4. Add the estimated reaction time to the fighter's time-to-climb. Locate this time on the attacker's pre-zero track, mark it with an arrow, and label this arrow "Estimated Detection Point".

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5. Using the fighter's distance-traveled-during-climb as a radius, scribe a circle about point zero. Label this circle zero.
6. Compute the distances traveled by the fighter at intercept true airspeed during the time intervals chosen in step 3. To EACH of these distances add the distance traveled by the interceptor during climb. Using these sums as radii, scribe circles about the post-zero points along the attacker's track line which correspond to the time intervals used in calculation. Label these circles with appropriate times.
7. Construction is now complete. Label the finished overlay prominently with the construction parameters: Types of attack and fighter aircraft, airspeed, altitudes, and so forth.

3.1.3 USE. Use of the template is as follows:

- a. Place the template on a JN chart which has been overprinted with the necessary intelligence in such fashion that the Attacker's Track Line falls along the proposed route and the Estimated Detection Point falls on the radar horizon or chosen detection point.
- b. The Attacker will make good the distance from the Estimated Detection Point to the Point marked "0" during the time which elapses while the defense net reacts and the fighter climbs to intercept altitude.
- c. Fighters (of template type) located at airfields falling on numbered circles will intercept the attacker at similarly numbered points along the attacker's track. Interpolation may be accomplished in standard fashion.

3.2 THE FLAK TEMPLATE.

3.2.1 TEMPLATE CONSTRUCTION. While construction of these templates is relatively simple, the process is sufficiently detailed to preclude adequate discussion in this publication. Anyone desiring construction details may request this information from the Commanding Officer, Fleet Intelligence Center Pacific.

3.2.2 TEMPLATE DESCRIPTION. The flak templates currently in the Fleet have been prepared for use with the 100,000 chart. They have been prepared for various altitude-weapon combinations, normally the highest and lowest effective altitudes of the weapon have been chosen.

The flak template provides order-of-magnitude information concerning intensity of fire along a given flight path. The intensity cited is on an arbitrary scale, and these scales differ from template to template. The relative intensities which appear on one template are in no way comparable to those which appear on templates constructed for any other altitude or weapon.

The centerline of the template defines the flight path of the aircraft, and the cross, marked "R.G.Z.", defines the intended point of impact of the weapon carried. It is assumed that the aircraft does not proceed past the R.G.Z. The distance from the R.G.Z. to the arc marked "0" is the effective range of the weapon-altitude combination for which the template is constructed.

No weapon which lies on or beyond the "0" arc, or its vertical appendages, has the capability to reach the attacker. Weapons which lie on any other arc or appendage have capabilities whose relative effectiveness is numerically indicated. It is necessary to interpolate for values of effectiveness assignable to weapons which lie between lines.

3.2.3 TEMPLATE USE: THE FLAK CLOCK. Since the flak template provides only relative information, it is useful only for comparative purposes. The "Flak Clock" is the graphic normally prepared for flak intensity comparison. Construction is as follows:

- (a) Locate the R. G. Z. on a 1:100,000 chart of the target area.
- (b) Plot the positions of all AAA weapons within the target area.
- (c) With the R.G.Z. as a center, construct a circle of any desired radius and divide this circle into equal sectors of reasonable size. A ten mile radius and 30° sectors are suggested values.
- (d) Place the flak template for the desired caliber over the chart in such fashion that the R.G.Z. of the template falls over the R.G.Z. marked on the chart and the flight path on the template falls along one of the sector dividers.
- (e) Record for each inbound heading the sum of the products of weapon number and intensity. For example, suppose that for a given inbound heading three batteries fall within the template boundaries. One of these batteries has five weapons whose relative intensity is 2.5, a second has six weapons having a relative intensity of 3.1, and the third has thirteen weapons which have an intensity of 4.3. The total intensity figure for that inbound heading, then, is 97.0.

The technique outlined above will produce a table of relative intensities versus inbound headings. Flak clock construction is completed by shading a sector around each inbound heading to a degree proportionate to the computed relative intensity.

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PART IV

TABULATED INFORMATION AND GEOGRAPHIC LOCATIONS OF INSTALLATIONS

4.0 DESCRIPTION AND EXPLANATORY INFORMATION. The following publications are the principle source documents for graphic orders-of-battle in this report.

ELECTRONIC: Electronic Order of Battle, Communist Forces, Far East (C). (PACOMALS NO. 4A)
ANTI-AIRCRAFT: AFIC Report, R-21, AAA Order of Battle, Communist Forces Far East.

SURFACE-TO-AIR MISSILES: Target Data Inventory (TDI)

AIRFIELDS: CINCPACFLT "Basic Intelligence Study Communist Countries, Far East".

4.0.1 Graphic Construction. The CINCPACFLT region of responsibility has been divided into smaller areas as shown on the chart on page 4.7. Four separate plots have been constructed for each of these areas depicting the geographic location of: Early Warning Radar installations, Ground Controlled Intercept Radar installations, Anti-Aircraft Artillery, and Surface-to-Air Missile installations, and Airfields supporting jet interceptors.

Where a graphic has been omitted, it may be assumed that there is no equipment of that type deployed on the area. For example, there is no airfield plot included for Area 15. This omission does not imply that there are no airfields in the area, but that the existing fields do not support jet-interceptor operations.

Because of the paucity of equipment and air defense installations in the Far North, all of the air defenses are depicted on one 1:5,000,000 scale chart. Because of the heavy concentration of AAA and SAM sites in the Vladivostok area, a separate SAM plot has been included on a 1:500,000 scale chart.

(a) Early Warning Radar Plots (EW Pages). In most cases the positions of radar installations are given a fix accuracy by the publishing command. PACOM AIS NO. 4A may, for instance, give the latitude and longitude of a station, and state that the fix accuracy is 20 miles. This leaves to the plotter the problem of exact position. This problem is of more than casual interest; since, within the fix accuracy stated, elevations exist which can cause large differences in the range of the radar horizon. In this publication the location having the highest elevation within the fix accuracy stated has been chosen. So doing will, in most cases, introduce a safety factor in the radar horizon location. No attempt has been made, except for obvious cases, to correct for radar blind areas in the radar horizon overplots.

The radar horizons on these graphics are line-of-sight horizons and are not dependent upon radar parameters. Once an aircraft has crossed the horizon, the chances of its being detected by the Sino Soviet Bloc are extremely high. These horizons apply to all sizes of aircraft.

(b) Ground Controlled Intercept Radar Plots (GCI Pages). These plots show the location of all radars capable of being used in a GCI role. It has been assumed that the collocation of an early warning and a height finding pair is indicative of a GCI site. In most cases, however, intelligence is not available to show that sites so indicated are actually used for this purpose. The GCI plots contain estimated effective GCI ranges for intercept of A3 and A4 aircraft flying above the radar horizon. The ranges are based upon the performance parameters of the least effective radar in the GCI site. No attempt has been made to correct for site location or radar blind areas.

(c) Anti-Aircraft Artillery and Surface to Air Missile Plots (AAA/SAM Pages). These plots show the locations of all known AAA and/or gun-laying radar sites. Only those sites which have been observed are included, except where, because of the strategic importance of the area and the general lack of information, AA weapons have been arbitrarily positioned. The reader is reminded that machine guns, which are not shown, undoubtedly exist in the vicinity of major targets.

Fire control radars confirmed by ELINT are plotted on these graphics even though an AAA site is not known to exist in the vicinity. Since a gun-laying radar is ordinarily sited with AAA, it can be assumed that AAA exists near each fire control radar.

(d) Airfield Plots (AF Pages). The airfields shown are those which are known to be supporting jet interceptor operations. The number and types stationed at each airfield is depicted through a coding technique. The seaward radar horizon of the early warning plots have been duplicated on the airfield plots for use in conjunction with the strike penetration templates, as recommended in paragraph 3.1.3.

When information is available, the model designation of interceptors is included; for example, FRESCO D will appear as FC-D on the plot.

(e) Air Defense Plot. Due to the scarcity of air defense installations in the Far North the air defense information has been incorporated into one Air Defense Plot for each of these areas. A 1:5,000,000 scale chart was selected as the base map for the Far North area and cannot be used with the Strike Penetration Templates now in the Fleet.

(f) High Early Warning Radar Boundaries. The early warning radar boundaries appearing on this page are based on the capabilities of the most effective early warning radar against both large and small reflective targets. In using these boundaries, it must be kept in mind that they describe the theoretical points of first detection of aircraft flying at 30,000 feet. The radar boundary is not definite, but will vary with target aspect, radar operator ability, atmospheric conditions, and other variables affecting radar performance.

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TABLE I
CHARACTERISTICS OF THE PRINCIPAL SINO-SOVIET RADARS (FAR EAST)

A. EARLY WARNING RADARS:

SET NAME	FREQUENCIES	MTI*	ANTI-JAM DEVICES*	MAXIMUM EFFECTIVE RANGE AT 30,000 FEET	
				A-3	A-4
BAR LOCK/ CROSS OUT	2704-3120 mc s	YES	YES	220 NM	220 NM
BIG MESH/ BIG BAR	563-3112 mc s	YES	YES	220 NM (GCI: 168 NM)	180 NM (GCI: 80 NM)
CROSS FORK	206-220 mc s	NO	LIMITED	100 NM	70 NM
CROSS SLOT	2970-3040 mc s	NO	NO	160 NM	120 NM
FLAT FACE	805-905 mc s	YES	YES	180 NM	140 NM
HI DUMBO	68-75 mc s	NO	NO	110 NM	70 NM
KNIFE REST A	70-74 mc s	NO	LIMITED	110 NM	70 NM
KNIFE REST B, C	78-105 mc s	NO	LIMITED	120 NM	72 NM
MOON CORN	9020-9435 mc s	UNKNOWN	UNKNOWN	300 NM	230 NM
SCR 270 DA	90-112 mc s	NO	NO	220 NM	220 NM
SO/BEEHOUSE HI SILVE	2790-2835 mc s	NO	NO	NONE	NONE
SPOON REST	150-157 mc s	NO	NO	200 NM	150 NM
SPOON REST B	83-85 mc s	NO	NO	200 NM	150 NM
TACHI 18	90-112 mc s	NO	NO	100 NM	70 NM
TALL KING	168.5-173.5 mc s	POSSIBLE	YES	300 NM	230 NM
TOKEN/SLANT MESH/2700-3120 STRIKE OUT	mc s	NO	LIMITED	160 NM (GCI: 111 NM)	120 NM (GCI: 60 NM)

B. HEIGHT FINDER RADARS:

ROCK CAKE	2600-2650 mc s	NO	LIMITED	180 NM	100 NM
STONE CAKE	2600-2830 mc s	NO	LIMITED	210 NM	150 NM
SPONGE CAKE	2600-2830 mc s	YES	UNKNOWN	210 NM	150 NM
SIDE NET	2615-2626 mc s	UNKNOWN	UNKNOWN	300 NM	230 NM

C. FIRE CONTROL RADARS:

				MAXIMUM RANGES (PRF LIMITED)	
				SEARCH	TRACK
BEAM TRACK	200-220 mc s	NO	NO	21 NM	15 NM
FAN SONG A,B,D	2965-3050 mc s	UNKNOWN	POSSIBLE	65 NM	33 NM
FAN SONG C,E	4925-5090 mc s	UNKNOWN	POSSIBLE	75 NM	35 NM
FIRE CAN/ FIRE WHEEL	2685-3040 mc s	YES	YES	43 NM	20 NM
WHIFF	2700-2880 mc s	NO	YES	35 NM	16 NM

D. AIRBORNE AID-TO-INTERCEPT RADARS:

			USE	MAXIMUM RANGES	
				SEARCH	TRACK
SCAN FIX	2750-2850 mc s	RANGE ONLY		0 NM	3 NM
SCAN ODD	9320-9420 mc s	SEARCH AND TRACK		5 NM	3 NM
SCAN ODD (MOD)	9320-9420 mc s	SEARCH AND TRACK		5-7 NM	2-4 NM
SCAN THREE	9320-9420 mc s	SEARCH AND TRACK		12-16 NM	8-16 NM
SCAN CAN	9320-9420 mc s	SEARCH AND TRACK		8 NM	6 NM
SPIN CAN	9320-9400 mc s	SEARCH AND TRACK IN NUMBER A/C		10 NM	7 NM
HIGH FIX	9365-9430 mc s	RANGE ONLY IN HIGH PERFORMANCE A/C		0 NM	3 NM

* - MTI and ANTI-JAM DEVICES installed on radars are estimates.

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TABLE II

CHARACTERISTICS OF SINO-SOVIET FIGHTER AIRCRAFT

CODE NAME DESIGNATOR	(1) ALL WEATHER CAPABILITY	MAX. ATTAINABLE MACH. NUMBER	(2) COMBAT RADIUS (NM) (400/M TANKS)		(3) TYPE		(4) GUN ARMAMENT		(5) ROCKETS		(6) AIR-TO-AIR MISSILE INSTALLATION		
			AAI RADAR		NR-23	NR-30	R-37	REVOLVER			AA-1	AA-2	AA-3
FACOR / MIG-15	NO	.92	330/1175	NONE	02	NO	01	NO	PROB	NO	PROB	NO	NO
FRESCO A/MIG-17	NO	.95	300/1250	NONE	02	NO	01	NO	PROB	NO	PROB	NO	NO
FRESCO C/MIG-17	NO	.97	270/1110	SCAN FIX	02	NO	01	NO	PROB	NO	PROB	NO	NO
FRESCO D/MIG-17	YES	.97	270/1110	SCAN ODD	03	NO	NO	NO	PROB	PROB	PROB	NO	NO
FRESCO E/MIG-17	YES	.95	300/1250	SCAN ODD	03	NO	NO	NO	PROB	PROB	PROB	NO	NO
FLASHLIGHT A/YAK-25	YES	.94	300/1250	SCAN THREE	NO	NO	02	NO	YES	YES	PROB	PROB	NO
FLASHLIGHT C/YAK-25	YES	1.00	235/	SCAN THREE	NO	NO	02	NO	YES	YES	PROB	PROB	NO
FARMER A/MIG-19	NO	1.27	420/1725	SCAN FIX	02	NO	01	NO	YES	NO	PROB	PROB	NO
FARMER B/MIG-19	YES	1.33	395/1680	SCAN ODD	NO	NO	NO	02	YES	NO	PROB	PROB	NO
FARMER C/MIG-19	NO	1.33	395/1680	(MODIFIED)	NO	NO	NO	02	YES	NO	PROB	PROB	NO
FARMER D/MIG-19	LIMITED	1.33	395/1680	SCAN FIX	NO	03	NO	02	YES	NO	PROB	PROB	NO
FARMER E/MIG-19	YES	1.27	365/1660	SCAN CAN	NO	NO	NO	02	YES	NO	PROB	PROB	NO
FISHBED A / B/MIG-21	LIMITED	1.48	365/1595	HIGH FIX	NO	NO	NO	03	YES	NO	PROB	PROB	NO
FISHBED C/MIG-21	LIMITED	1.94	290/1360	HIGH FIX	NO	02	NO	NO	YES	NO	PROB	PROB	NO
FISHBED D/MIG-21	YES	2.1	290/1360	SPIR CAN	NO	NO	NO	02	YES	NO	PROB	PROB	NO
FILTA A/SU-7	NO	1.25	465/1760	HIGH FIX	NO	NO	NO	02	YES	NO	PROB	PROB	NO
FILTA B/SU-7	YES	1.74	465/1760	SPIR CAN	NO	NO	NO	02	YES	NO	PROB	PROB	NO
FISHPOT B/SU-9	YES	2.07	465/1690	SPIR CAN	NO	NO	NO	02	YES	NO	PROB	PROB	NO
FISHPOT C/SU-9	YES	1.90	465/1700	SPIR CAN	NO	NO	NO	02	YES	NO	PROB	PROB	NO

(1) Limited All-Weather capability indicates that a night-intercept capability exists in clear air.

(2) TAKE-OFF and accelerate to best climb speed with military power; climb to best cruise altitude with military power; cruise out at speed for best range at best cruise altitude dropping tanks when empty; climb to combat ceiling with max. pwr.; combat at combat ceiling cruise back at speed for best range at best cruise altitude.

(3) See TABLE I, Page 4.2 for operating characteristics of AAI radars.

(4) GUN ARMAMENT:	TYPE	CALIBER (mm)	RATE OF FIRE	RANGE (ft)	TOTAL ROUNDS PER GUN
NR-23		23	800 RPM	3500	6 sec 80
NR-30		30	825 RPM	3500	10 sec 120
R-37 (FACOT)		37	400 RPM	3500	6 sec 40
IMPROVED R-37		37	515 RPM	3500	6 sec 52
REVOLVER		23-30	1250 RPM	3500	4-6 sec 80-125

(5) NO - Not compatible with aircraft and/or guidance equipment.

PROB - Compatible with aircraft and guidance equipment, but not likely to be fitted on type aircraft.

YES - Compatible with aircraft and guidance equipment and might be installed on type aircraft.

YES - Missile has been observed installed in type aircraft.

TABLE III
CHARACTERISTICS OF ANTI-AIRCRAFT ARTILLERY

CALIBRE (mm)	NOMENCLATURE	HORIZ RANGE (yds)	MAX VERT RANGE (ft)	EFFECTIVE CEILING (ft)	WEIGHT, TYPE OF PROJECTILE (lbs)	RATE OF FIRE (rpm)	MISILE VELOCITY (ft per sec)	TRAVERSE TOTAL (deg)	ELEV LIMITS (deg)	WEIGHT (lbs)	REMARKS
12.7	12.7 - mm GSNK Heavy Machine Gun, M1938/46	7,650	11,500	3,000(1)	0.10, AP	80 per barrel	2,800	360	-10 85	397	Standard on T-54 tank and APC's
14.5	14.5 ZPU-1, ZPU-2, ZPU-4 Machine Gun	9,500	14,300	3,500(1)	0.12, HE	80 per barrel	3,300	360	-10 85	1,000 (ZPU-2)	Single, dual, and quad mount
37	37-mm Gun M-1939	8,800	19,800	9,850	1.61, HE	100	2,900	360	5 85	4,620	Being Phased Out in Russia, still widely used in China and other Communist-supplied countries.
57	57-mm Automatic Gun S-60	14,300	25,000	8,600-16,000(2)	2.8, HE	130	3,300	360	-10 90	7,840	Two, self propelled version also in use, known as ZSU-57-2.
85	85-mm Anti-aircraft Gun M-1939			27,500	20.3, HE	15-20	2,600				Radar Fire Control
85	85-mm Anti-aircraft Gun M-1944	17,600	29,400	30,000(4) 34,000	20.3, HE	15-20	3,000	360	-3 85	10,750	Radar Fire Control
100	100-mm Anti-aircraft Gun	25,000	50,000	35,000	34, HE (5)	15-20	3,000	360	-3 85	24,250 (3)	Power Laying and Radar Fire Control
130	130-mm Anti-aircraft Gun	27,000	60,000	39,000	74, HE (5)	15	3,000	360	-5 80		Radar Fire Control

- (1) This is considered to be the effective hitting range with optical sights and visual observation of the tracers.
 (2) 6,000 ft. is the estimated effective ceiling using on-carriage sights.
 (3) 16,000 ft. is the estimated effective ceiling using off-carriage radar fire control. ZSU-57-2 does not have off-carriage fire control.
 (4) Weight in firing position.
 (5) Engagement of 400 ft. oncoming bomber for 20 sec time of fire.
 (6) Proximity fuses are believed to be available.

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DEPLOYMENT OF SAMs.

SA-2 Surface-to-Air Missiles are still deployed extensively throughout the Soviet Bloc. The following confirmed SA-2 SAM sites are of concern to Naval Forces in the Far East. Existing sites which are not listed herein fall outside of the area depicted on the inside front cover of this publication.

PLACE	COORDINATES
BARANO OREN	44-27N, 131-35E
BARANO OREN	44-03N, 131-24E
BARANO OREN	44-26N, 131-22E
BARANO OREN	44-10N, 131-45E
CHERNIGOVKA	44-11N, 132-31E
CHERNIGOVKA	44-12N, 132-11E
CHERNYSHEVKA	44-11N, 133-05E
DALNAYA	43-56N, 142-04E
DOSTOYEVKA	44-21N, 133-30E
KHABAROVSK	48-19N, 134-52E
KHABAROVSK	48-36N, 135-08E
KHABAROVSK	48-29N, 135-30E
KHABAROVSK	48-11N, 135-08E
KIYEVA	42-53N, 133-40E
KOMSONOLSK	50-24N, 137-22E
KOMSONOLSK	50-42N, 136-53E
KOMSONOLSK	50-43N, 137-11E
KORSKOV	50-24N, 136-55E
MAGADAN	46-37N, 142-49E
MAGADAN	59-31N, 150-56E
MAGADAN	59-45N, 150-48E
NAKHODKA	42-55N, 133-07E
NAKHODKA	42-55N, 132-31E
NAKHODKA	42-50N, 132-47E
NAKHODKA	42-42N, 133-02E
NIKOLAYEVSK	52-51N, 141-13E
NIKOLAYEVSK	53-10N, 140-44E
NIKOLAYEVSK	53-03N, 141-14E
NOVOSYVOYEVKA	43-50N, 133-16E
★OLGA	44-10N, 133-57E
★OLGA	43-48N, 135-21E
PEI PING	43-59N, 135-31E
PEI PING	39-48N, 116-42E
PEI PING	39-39N, 116-23E
PEI PING	40-09N, 116-18E
PETROPAVLOVSK KAMCHATSK	39-51N, 116-09E
PETROPAVLOVSK KAMCHATSK	53-05N, 158-52E
PETROPAVLOVSK KAMCHATSK	52-55N, 158-45E
PETROPAVLOVSK KAMCHATSK	52-54N, 158-38E
PETROPAVLOVSK KAMCHATSK	52-53N, 158-37E
PETROPAVLOVSK KAMCHATSK	53-03N, 158-18E
PETROPAVLOVSK KAMCHATSK	53-20N, 158-11E
PETROPAVLOVSK KAMCHATSK	52-45N, 158-29E
PORONAYSK	49-24N, 142-52E
PYONGYANG	38-46N, 125-51E
★PYONGYANG	39-12N, 125-40E
★RAZDOLNTE	43-35N, 131-59E
★SERNOVODSK	43-47N, 145-31E
SHIH MEN	38-05N, 116-25E
SOVETSKAYA GAVAN	49-11N, 140-19E
SOVETSKAYA GAVAN	48-57N, 140-05E
SOVETSKAYA GAVAN	48-59N, 140-23E
SOVETSKAYA GAVAN	48-49N, 140-13E
SUCHAN	43-18N, 133-20E
★TE HSIEH	36-30N, 116-08E
UGOLEV	64-49N, 177-26E
USSURIYSK	43-54N, 132-03E
USSURIYSK	43-55N, 132-26E
VLADIVOSTOK	43-03N, 131-36E
VLADIVOSTOK	43-10N, 132-20E
VLADIVOSTOK	42-59N, 131-55E
VLADIVOSTOK	43-00N, 131-48E
VLADIVOSTOK	43-03N, 131-50E
VLADIVOSTOK	42-52N, 132-20E
VLADIVOSTOK	42-46N, 132-21E
VLADIVOSTOK	42-50N, 131-17E

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The following SA-3 sites have been confirmed in the Soviet Far East:

<u>PLACE</u>	<u>COORDINATES</u>
USSURIYSK	44-01N, 132-31E
USSURIYSK	43-53N, 132-17E
★ USSURIYSK	44-01N, 132-12E
VLADIVOSTOK	43-08N, 132-03E
★ VLADIVOSTOK	43-02N, 131-33E
★ VLADIVOSTOK	42-58N, 131-54E
★ VLADIVOSTOK	42-59N, 131-48E

The following sites in a general Surface-to-Air category have been confirmed in the Soviet Far East:

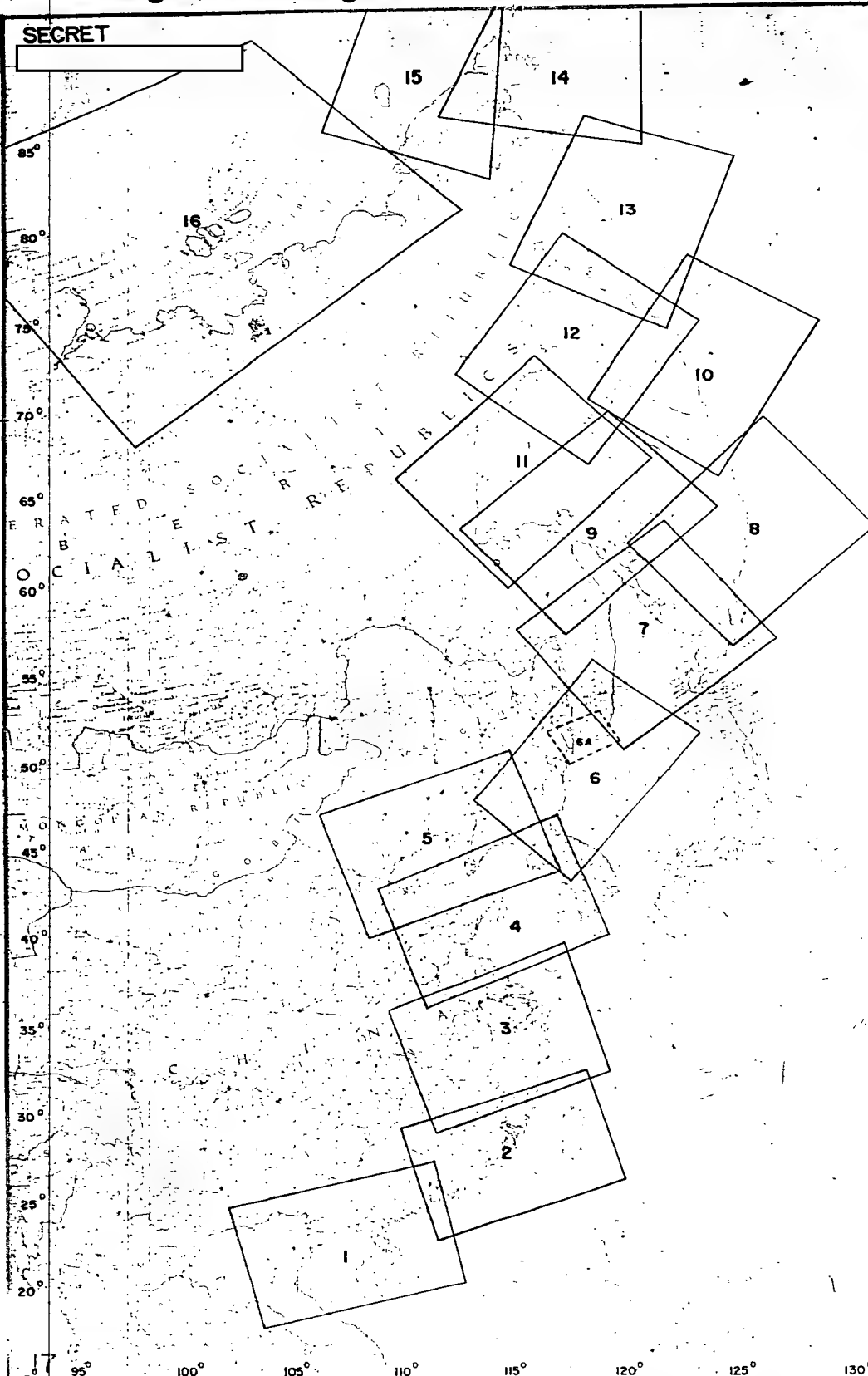
<u>PLACE</u>	<u>COORDINATES</u>
PETROPAVLOVSK KAMCHATSK	53-03N, 158-18E
PORONAYSK	49-07N, 142-57E

ORIGINAL
1 October 1963

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SECRET



135° 140° 145°

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SCALE 1:115,000,000
CHANGE NO ORIGINAL
DATE 1 OCTOBER 1963
PLOT OF THE SSADFE CHART AREAS

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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 I UNKNOWN
 BK "BKG" (CHINESE)
 BL BAR LOCK
 BM BIG MESH
 C CCR - 270 DA
 D DUMBO
 FF FLAT FACE
 FR FORK REST
 H TACHI 18
 HI HIGH BIEVE
 J JAP ME 1
 K KNIFE/REST
 P JAP ME 1 MOD 3 / JAP TYPE III
 R RI-DUMBO
 SH SLANT MESH
 SO SO/SEE HOUSE
 SR SPOON REST
 T TOWER
 TK TALL KING
 X CROSS SLOT
 Y CROSS FORK

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FA FISHBED
 FC FRESKO
 FC-D FRESKO-D
 FG FAGOT
 FH FISHNET
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

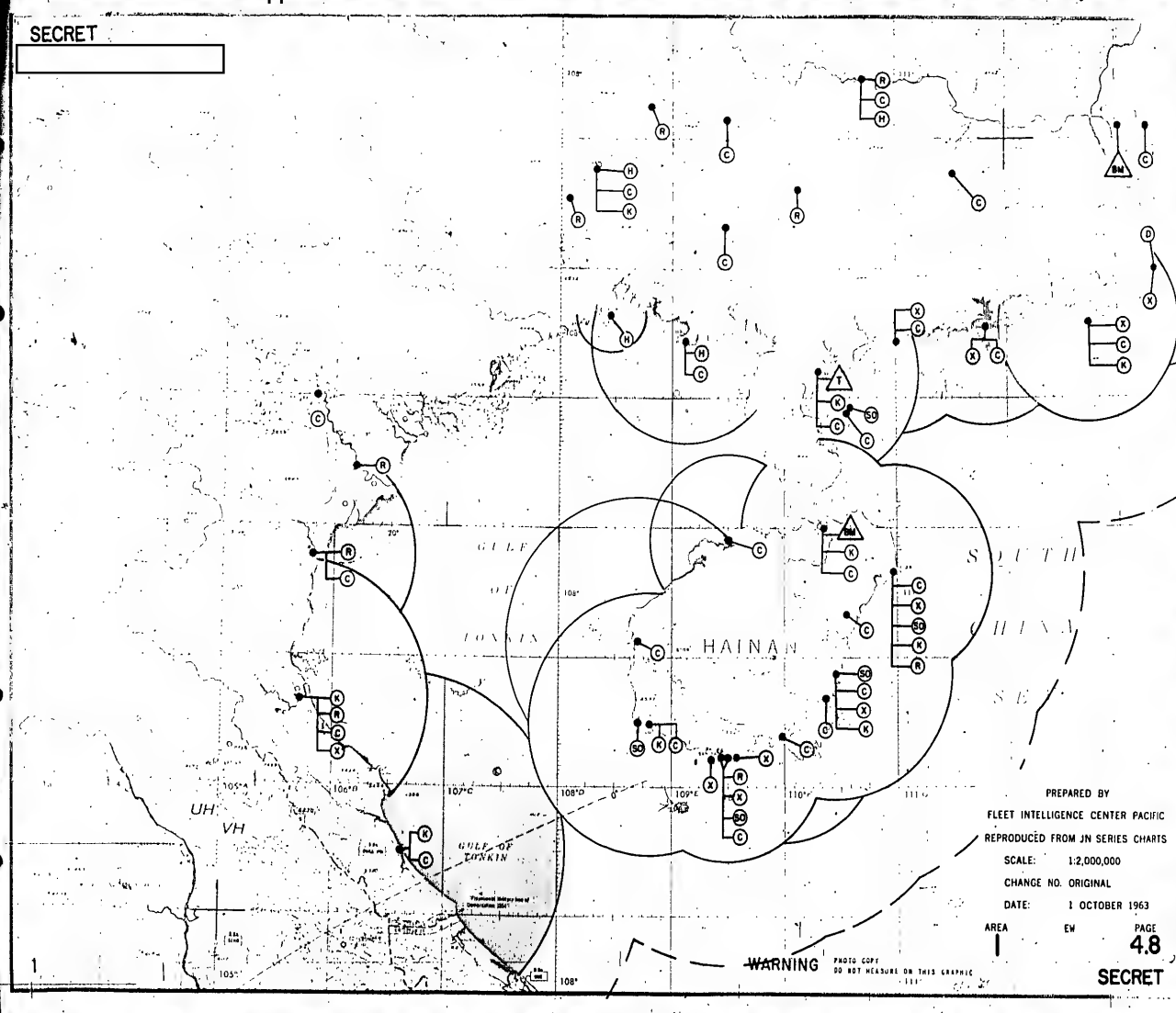
△ EW/GCI RADAR
 ⊕ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 RC ROCK CAKE
 SC STONE CAKE
 SK SPOKE CAKE
 SN SIDE NET
 SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
 NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INDIVIDUAL RADARS AGAINST AIRCRAFT IN A NORTH-ON ASPECT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE-GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊕ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊕ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FM FIRE WHEEL
 BT BEAM TRACK
 SV SURVEILLOR
 W WITNESS

AAA TYPES

◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SINGLES DENOTES TOTAL GUNS AT SITE



EARLY WARNING RADAR PLOTS (EW PAGES)

○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
I	UNKNOWN	--- 100-2000' AT 5-1000' HORIZON
BK	"BKK" (CHINESE)	--- 100-2000' AT 5-1000' HORIZON
BL	BAR LOCK	--- THEORETICAL RADAR HORIZON
BM	BIG MESH	--- 100-2000' AT 5-1000' HORIZON
C	SCR - 270 BA	--- 100-2000' AT 5-1000' HORIZON
D	DUMBO	--- 100-2000' AT 5-1000' HORIZON
FF	FLAT FACE	--- 100-2000' AT 5-1000' HORIZON
FR	FORK REST	--- 100-2000' AT 5-1000' HORIZON
H	TACHI IN	--- 100-2000' AT 5-1000' HORIZON
HI	HIGH SUEW	--- 100-2000' AT 5-1000' HORIZON
J	JAP PW 1	--- 100-2000' AT 5-1000' HORIZON
K	KNIFE REST	--- 100-2000' AT 5-1000' HORIZON
P	JAP PW 1 MOD 3 / JAP TYPE III	--- 100-2000' AT 5-1000' HORIZON
R	HI-DUMBO	--- 100-2000' AT 5-1000' HORIZON
SM	SLANT MESH	--- 100-2000' AT 5-1000' HORIZON
SO	SO/SEE HOUSE	--- 100-2000' AT 5-1000' HORIZON
SR	SPOON REST	--- 100-2000' AT 5-1000' HORIZON
T	TOKEN	--- 100-2000' AT 5-1000' HORIZON
TK	TALL KING	--- 100-2000' AT 5-1000' HORIZON
X	CROSS SLOT	--- 100-2000' AT 5-1000' HORIZON
XY	CROSS FORK	--- 100-2000' AT 5-1000' HORIZON

AIRFIELD PLOTS (A/P PAGES)

- LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FB	FISHED
FC	FISCO
FC-D	FISCO-D
FG	FAGUT
FI	FISHNOT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△	EW/GCI RADAR
⊕	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
RC	BACK CAKE
SC	STONE CAKE
SK	SURGE CAKE
SN	SIDE NET

NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INDIVIDUAL RADARS AGAINST AIRCRAFT IN A WORKING ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.

- RADAR COVERAGE BY A SINGLE RADAR
- RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
- RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

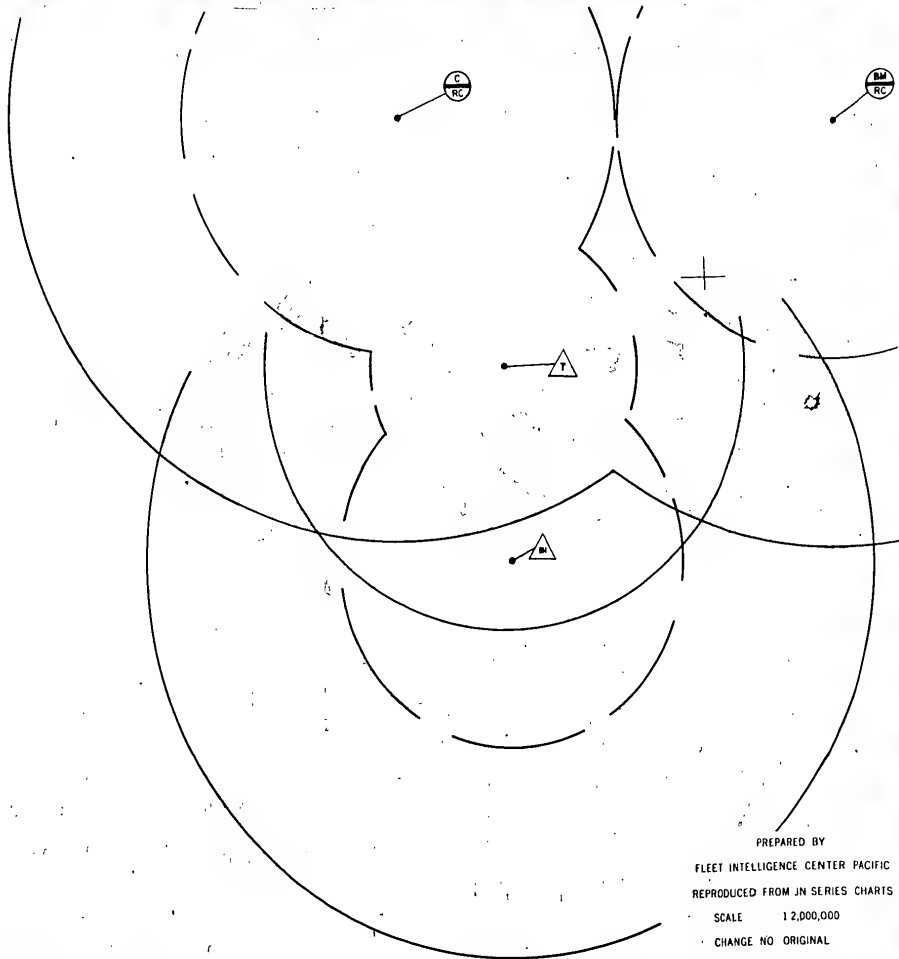
⊕	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊕	CONFIRMED GENERAL SAM SITE
⊕	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SUNVISOR
W	WHIFF

AAA SITES

◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)

NUMBERS WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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SCALE 1:2,000,000
CHANGE NO ORIGINAL
DATE 1 OCTOBER 1963

AREA 1
GC1
PAGE 4.9
SECRET

EARLY WARNING RADAR PLOTS (EW PAGES)

○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (EW/GCI) RADAR	
T	UNKNOWN	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BK	"BKK" (CHINESE)	
BL	BAR LOCK	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BM	BIG MESH	
C	SCR - 270 DA	
D	DUMBO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FR	FORK REST	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
H	TACHI IN	
HI	HIGH SILVER	
J	JAP W-1	
K	KNIFEPOST	
P	JAP W-1 MED 1 / JAP TYPE III	
R	HI-DUMBO	
SM	SLANT MESH	
SO	SO/REE HOUSE	
SN	SPOON REST	
T	TOKEN	
TK	TALL KING	
X	CROSS SLOT	
XY	CROSS FORK	

AIRFIELD PLOTS (A/P PAGES)

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- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FB	FISHBED
FC	FRESH
FC-D	FRESH-D
FG	FACOT
FI	FISHNET
FL	FLASHLIGHT
FM	FARMER
FT	FILTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△	EW/GCI RADAR
⊕	EW RADAR CO-LOCATED WITH BRIGHT FINDER (BF) RADAR TO FORM GCI UNITS
BC	BACK CASE
SC	STONE CASE
SK	SPOON CASE
SN	SIDE NET
SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS	
—	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
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<input type="checkbox"/>	RADAR COVERAGE BY A SINGLE RADAR
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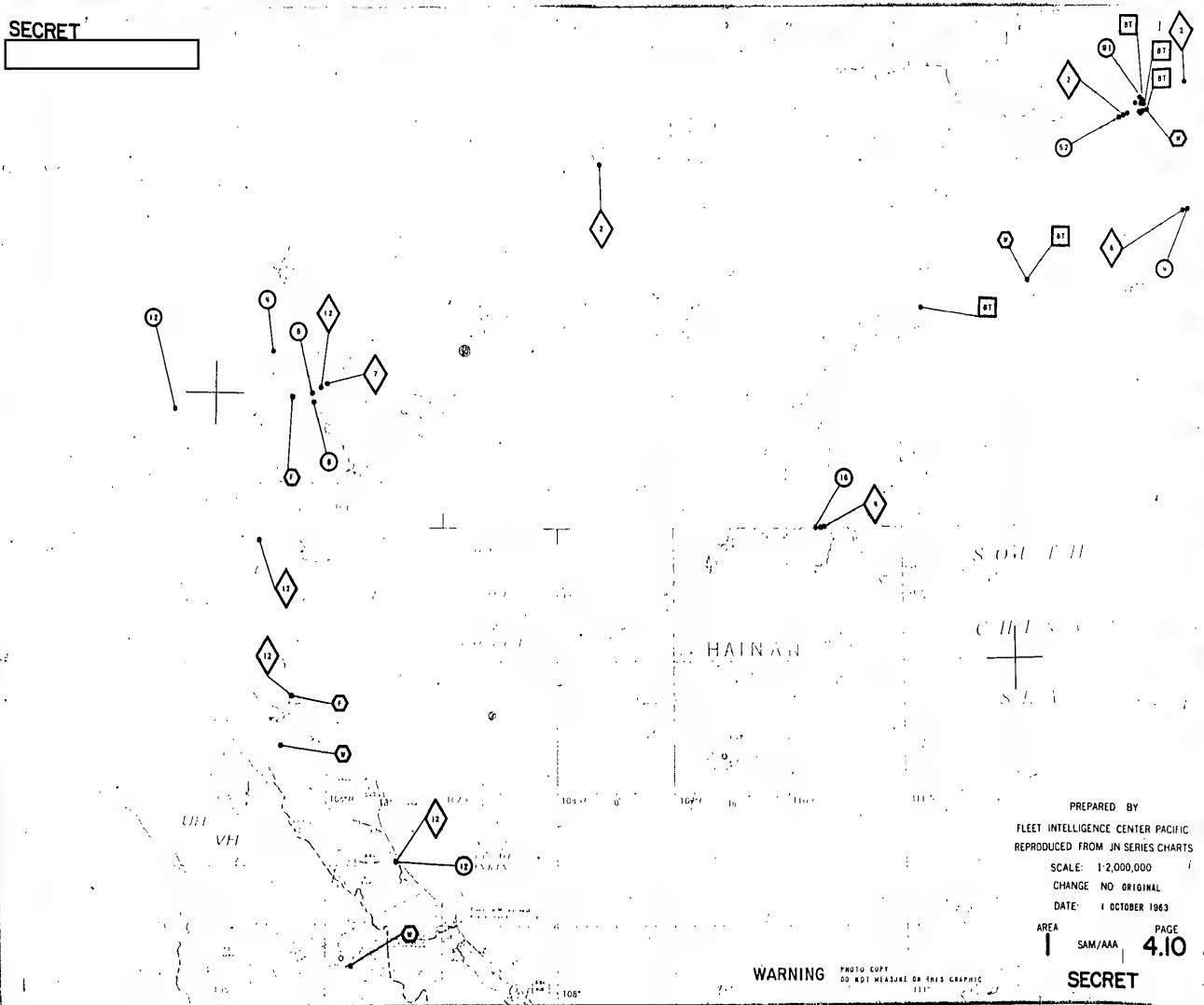
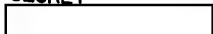
SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊙	CONFIRMED GENERAL SAM SITE
○	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
▽	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SUNVISOR
W	WHIFF

AAA SITES

◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

SECRET



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CHANGE: NO ORIGINAL
DATE: 1 OCTOBER 1963

AREA 1 PAGE 4.10
SAM/AAA

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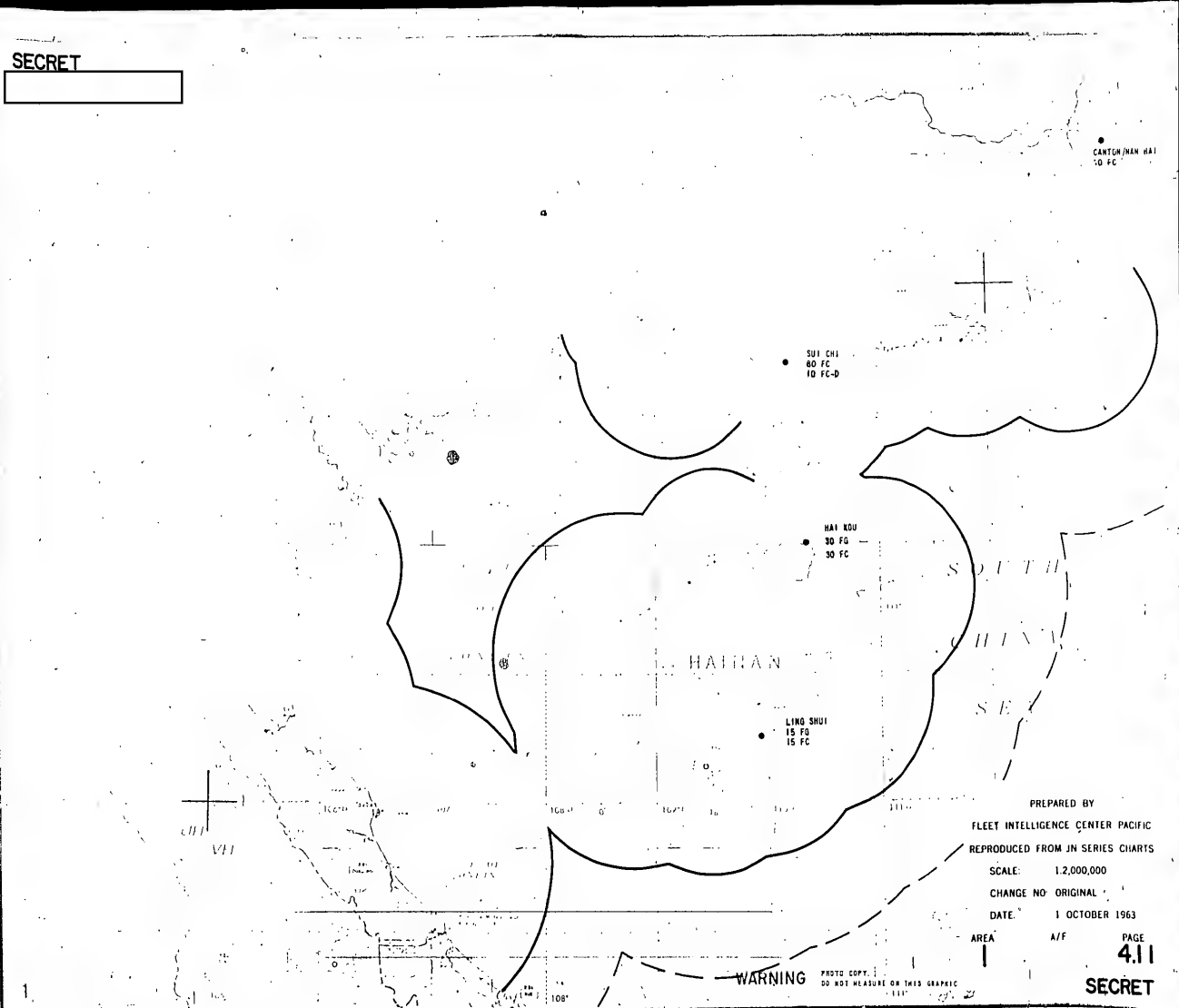
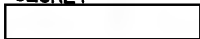
EARLY WARNING RADAR PLOTS (EW PAGES)		
○	EARLY WARNING (EW) RADAR	
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BE	"BEET" (CHINESE)	
BL	BAR LOCK	
BH	BIG HORN	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
C	SCR - 270 HA	
D	DUMBO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FR	FORK MUST	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
H	TACHI 1b	
HI	HIGH SILVER	
J	JAP MK I	
K	KNIFERST	
P	JAP MK I MOD 3 / JAP TYPE-111	
R	HI-DUMBO	
SH	SLANT MESH	
SO	SO/BEE HOUSE	
SE	SPOON MUST	
T	TOKEN	
TK	TALL KING	
X	CRUIS SLOOT	
XY	CRUIS YORK	

AIRFIELD PLOTS (A/F PAGES)	
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---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FA	FISHBED
FC	FRESKO
FC-D	FRESKO-D
FG	FACOT
PH	FISHPOT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊖	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
RC	ROCK LAKE
SC	STONE LAKE
SK	SHRUB LAKE
SN	SIDE NUT
	SEE EW PAGES FOR EARLY WARNING RADAR ABBREVIATIONS
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⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
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⊖	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SHIVVER
W	WHIFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

SECRET



EARLY WARNING RADAR PLOTS (EW PAGES)

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BL	BAR LOCK	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BH	BIG MESH	
C	SCR - 270 BA	
D	DUMBO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FR	FORK REST	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
H	TACHI IN	
HI	HIGH SIEW	
J	JAP PW 1	
K	KNIFE REST	
P	JAP PW 1 MOD 1 / JAP TYPE 111	
R	JIL-DUMBO	
SH	SLANT MESH	
SO	SO/BEE HOUSE	
SR	SPOON REST	
T	TOKEN	
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X	CROSS SLOT	
XY	CROSS FORK	

AIRFIELD PLOTS (A/P PAGES)

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AIRCRAFT CODE

FB	FISHED
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FC-D	FRESKO-D
FG	FAGOT
FR	FISHNOT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

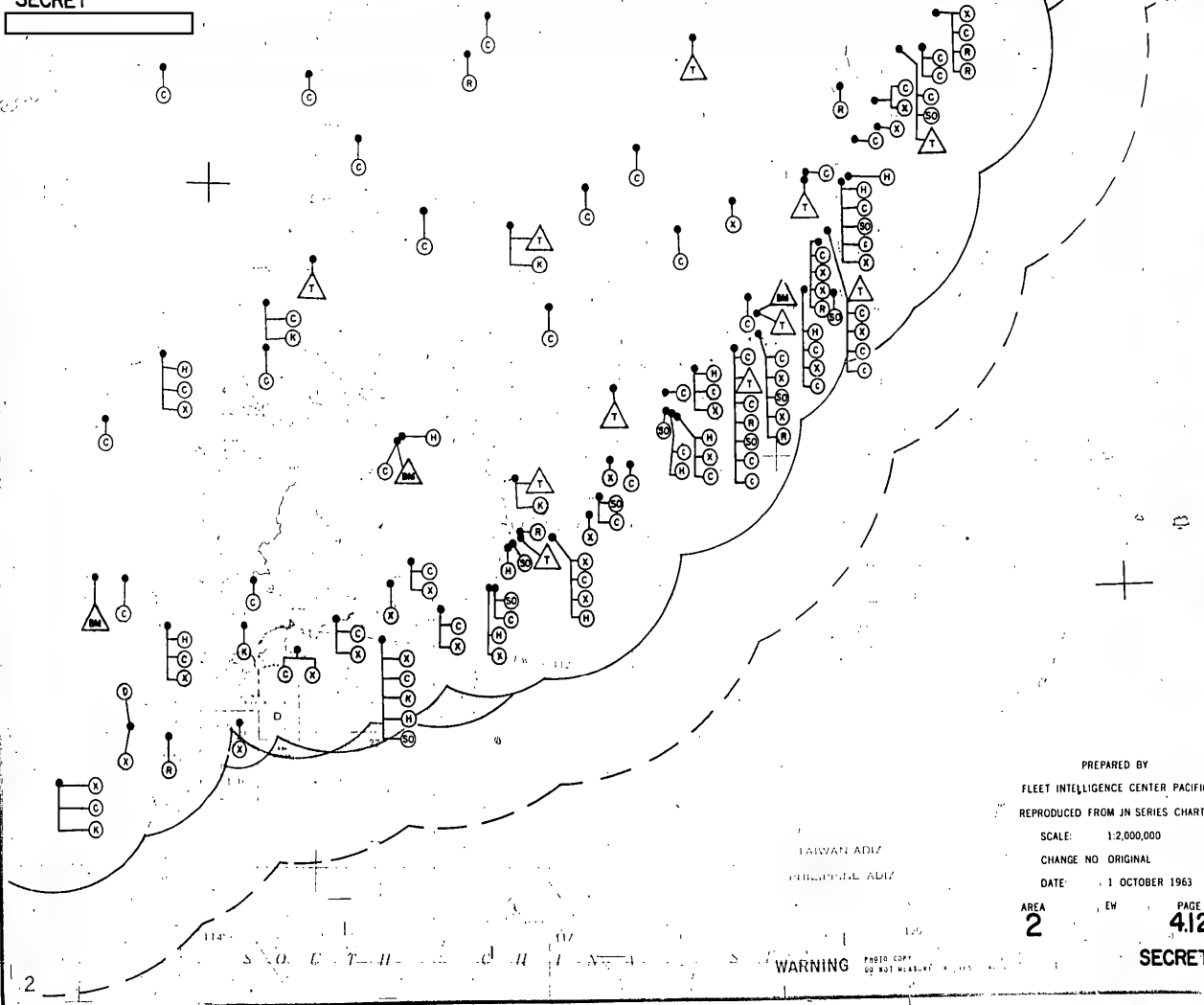
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<input type="checkbox"/>	RADAR COVERAGE BY A SINGLE RADAR
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<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

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SV	SUNVISOR
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SECRET



EARLY WARNING RADAR PLOTS (EW PAGES)

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 BM BIG MESH
 C SCR - 230 BA
 D DUMBO ☐ RADAR COVERAGE BY A SINGLE RADAR
 FF FLAT FACE ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 FR FORK REST ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
 H TACHI 16
 HI HIGH SIEVE
 J JAP MK I
 K KNIVENREST
 P JAP MK I MOD 3 / JAP TYPE III
 R HI-DUMBO
 SH SLANT MESH
 SO SO/SEE HOUSE
 SR SPOON REST
 T TOWN
 TK TALL KING
 X CROSS SLOT
 XF CROSS FORK

AIRFIELD PLOTS (A/F PAGES)

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 FC FRESKO
 FC-D FRESKO-D
 FG FAGOT
 FH FISHPOT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

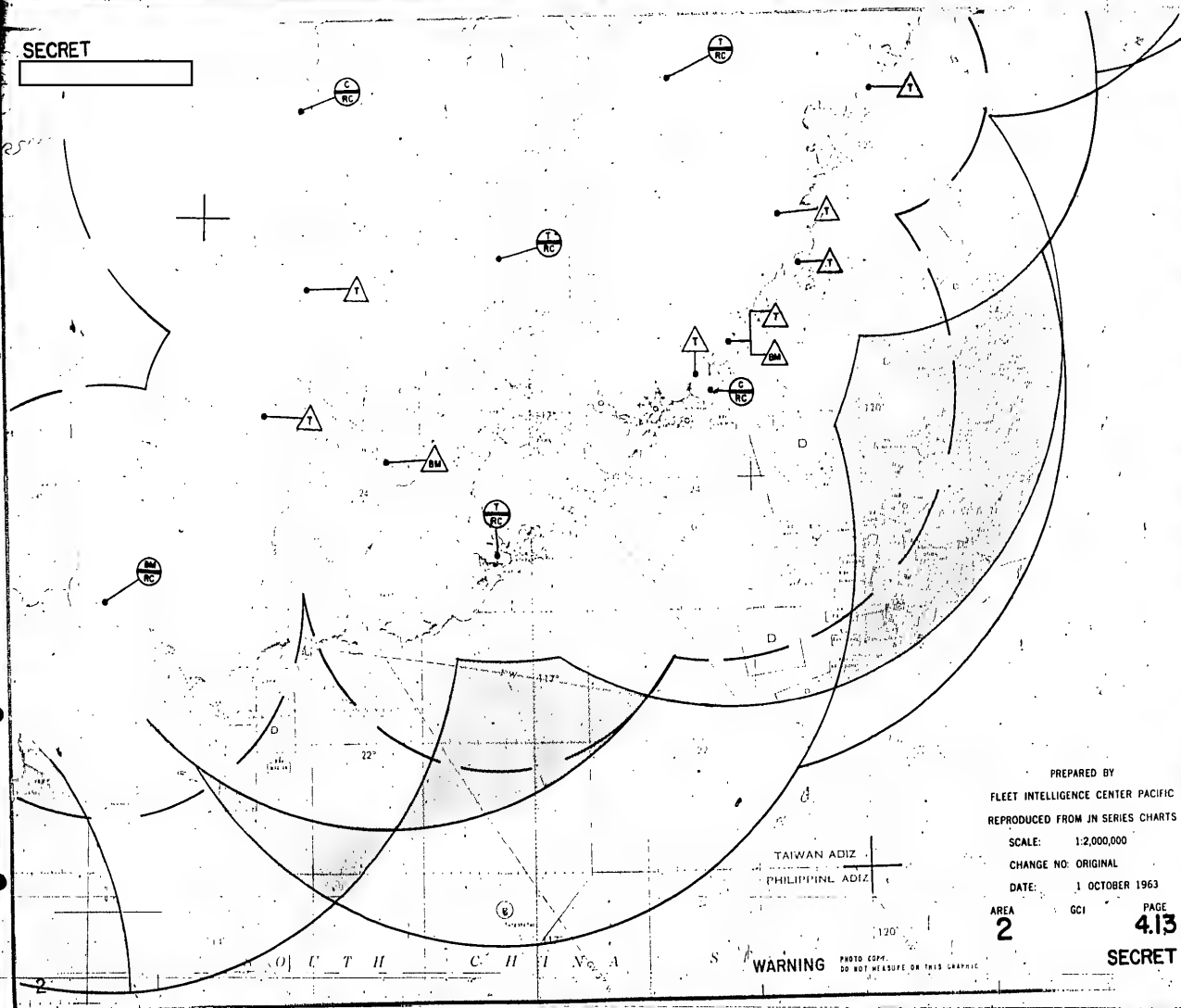
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☐ RADAR COVERAGE BY A SINGLE RADAR
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SURFACE TO AIR MISSILE (SAM) SIGHTING RADAR AND AAA PLOTS (SAM/AAA PAGES)

- ⊗ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
☐ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
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 SV SURVEILLOR
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 AAA SITES
 ◇ LIGHT AAA GUNS (21-75mm)
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 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
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 BK "BEIJ" (CHINESE)
 NL BAR LOCK
 BM BIG MESH
 C SCR - 270 DA
 D DUMBO
 FF FLAT FACE
 FK FOKK REST
 H TACHI IS
 HI HIGH SIEVE
 J JAP ME I
 K KNIFEHST
 P JAP ME I MOD / JAP TYPE III
 R HI-DUMBO
 SM SLANT MESH
 SO SO/REE HOSE
 SR SPOON REST
 T TONKIN
 TK TALL KING
 X CROSS SLOT
 XF CROSS FORK

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE
 FB FISHED
 FC FESCO
 FC-D FESCO-B
 FG FAGON
 FH FISHPOT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

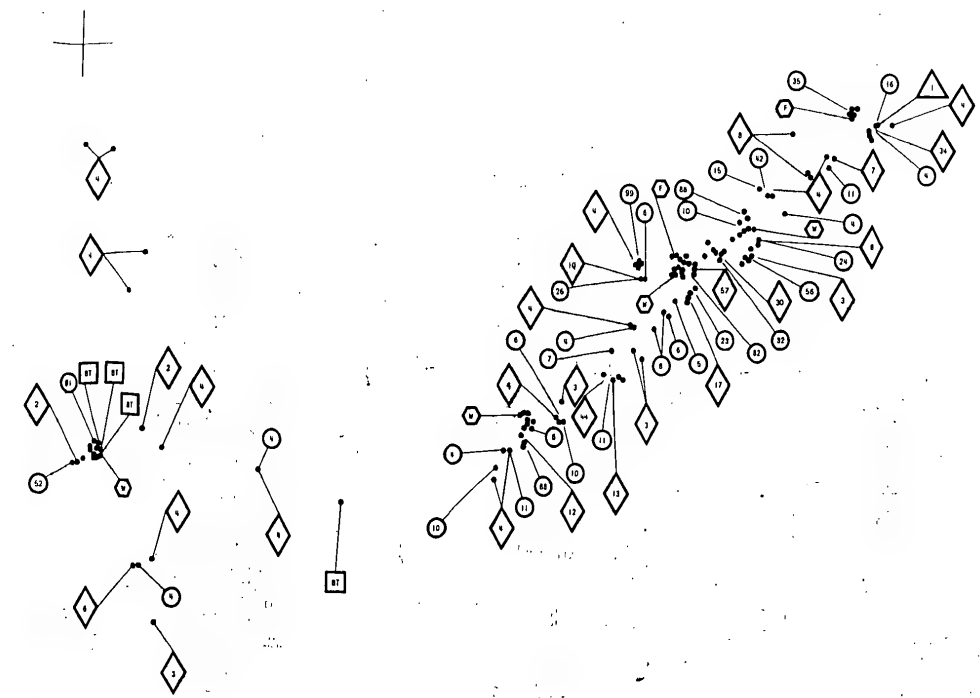
△ GCI RADAR
 ⊙ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 KC ROCK CAKE
 SC STONE CAKE
 SK SPOON CAKE
 SN SIDE NET
 SEE EW PAGES FOR EARLY WARNING RADAR ABBREVIATIONS
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
 NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INTERCEPT RADARS AGAINST AIRCRAFT IN A DOWN-ON ASPECT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊕ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊕ CONFIRMED GENERAL SAM SITE
 ⊙ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FM FIRE WHEEL
 BT BEAM TRACK
 SV SURVIVOR
 W WHITE

AAA SITES
 ◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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AREA 2 SAM/AAA PAGE 4.14

FORMAN ADIZ
PHILIPPINE ADIZ

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EARLY WARNING RADAR PLOTS (EW PAGES)

○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
T	UNKNOWN	--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BK	"BKKI" (CHINESE)	--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BL	BAR LOCK	
BH	BIG MESH	
C	SCR - 270 DA	
D	DUMBO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FR	FORK REST	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
H	TACHI 18	
HI	HIGH STEVE	
J	JAP MK I	
K	KNIFEPOST	
P	JAP MK I MOD 3 / JAP TYPE III	
R	HI-DUMBO	
SH	SLANT MESH	
SO	SO/BEE HOUSE	
SR	SPOON REST	
T	TOWER	
TK	TALL KING	
X	CROSS SLOT	
XF	CROSS FORK	

AIRFIELD PLOTS (A/F PAGES)

- LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FB	FISHED
FC	FRESCO
FC-D	FRESCO-D
FG	FAGOT
FH	FISHPOT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△	EW/GCI RADAR
⊗	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
RC	ROCK CAKE
SC	STONE CAKE
SK	SPOON CAKE
SN	SIDE NET
SAE	SAE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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<input type="checkbox"/>	RADAR COVERAGE BY A SINGLE RADAR
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

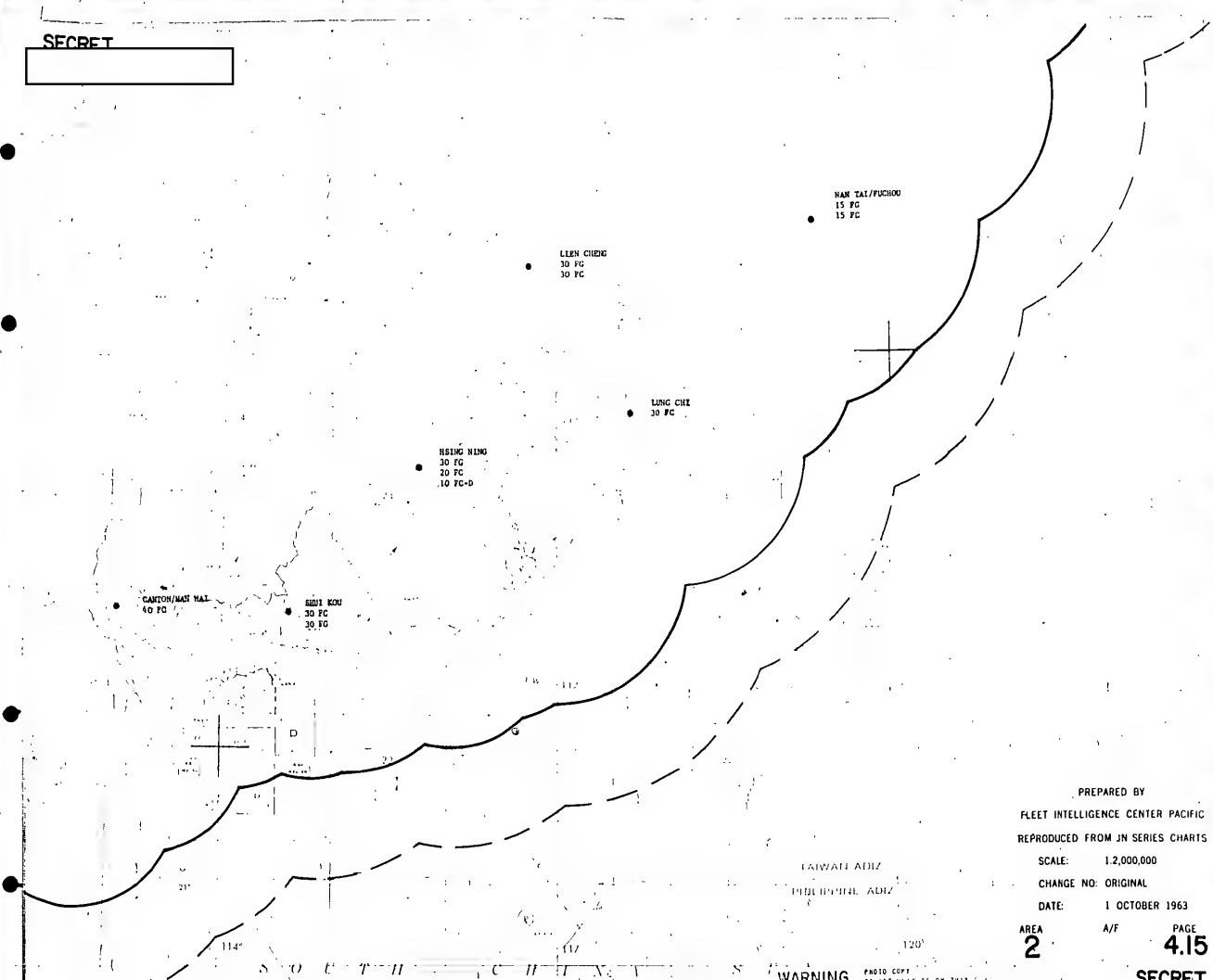
SURFACE TO AIR MISSILE (SAM) SITE, GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
○	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
P	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SURVIVOR
W	WHEEP

AAA SITES

◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS	DEMOTES TOTAL GUNS AT SITE

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A/F
PAGE 4.15

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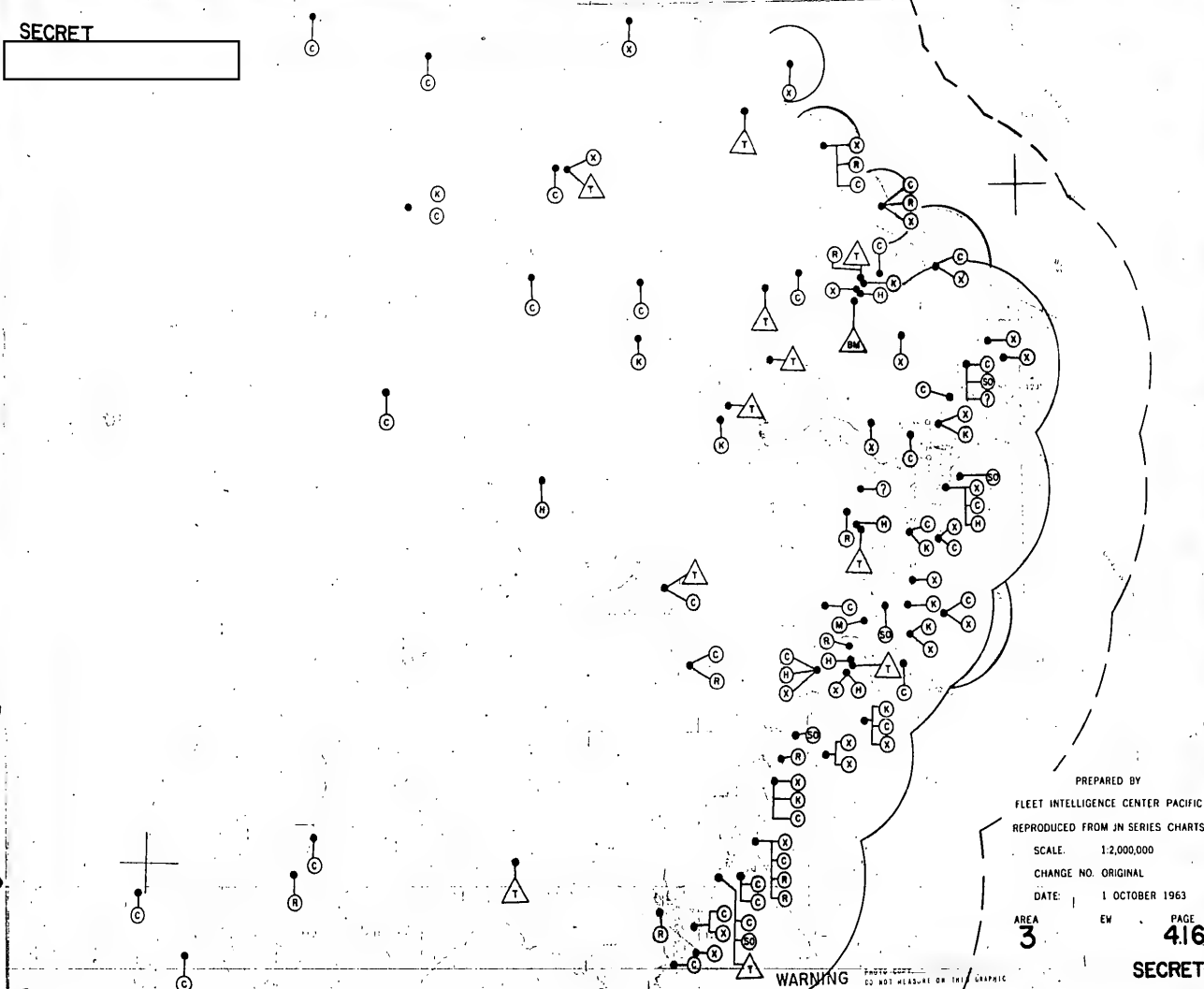
EARLY WARNING RADAR PLOTS (EW PAGES)	
○	EARLY WARNING (EW) RADAR
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
T	UNKNOWN
KK	"KIM" (CHINESE)
KL	BAR LOCK
RM	SIG MESH
C	SCR - 370 DA
D	DUMBO
FF	FLAT PACE
FR	FORK RUST
H	TACHI 18
HI	HIGH SIEVE
J	JAP MK I
K	KNIVEREST
P	JAP MK I MOD 3 / JAP TYPE III
R	NI-DUMBO
SH	SLANT MESH
SO	SO/BEE HOUSE
SR	SPON REST
T	TOKEN
TK	TALL KING
X	CROSS SLOT
XP	CROSS TONK

AIRFIELD PLOTS (A/F PAGES)	
●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
—	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 30° ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000° ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	FISHBED
FC	FRESKO
FC-D	FRESKO-D
FG	FADON
FR	FISHPOD
FL	FLASHLIGHT
FN	FARMER
FT	FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊖	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
RC	ROCK CAKE
SC	STONE CAKE
SK	SPONGE CAKE
SR	SIRE NET
---	SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
NOTE:	THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INDIVIDUAL RADARS AGAINST AIRCRAFT IN A NORM-OF-ASPECT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.
□	RADAR COVERAGE BY A SINGLE RADAR
□	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
□	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)	
⊕	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
○	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SUNVISOR
W	WIDF
AAA SITES	
◇	LIGHT AAA-GUNS (21-75mm)
○	MEDIUM AAA-GUNS (76-100mm)
△	HEAVY AAA-GUNS (101mm and above)
NUMBER WITHIN SYMBOLS	DENOTES TOTAL GUNS AT SITE

--



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AREA
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FW

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EARLY WARNING RADAR PLOTS (EW PAGES)

○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
?	UNKNOWN	--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
IK	"BKG" (CROSS)	
NL	BAR LOCK	
IM	BIG MESH	--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
C	SCR - 270 DA	
D	DUMBO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FR	FORK REST	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
H	JACKI 18	
HI	HIGH SIEVE	
J	JAP MK I	
K	KNIFEREST	
P	JAP MK I MOD 3 / JAP TYPE III	
B	HI-DUMBO	
SM	SLANT MESH	
SO	SO/BEE HOUSE	
SR	SPOON REST	
T	TOKEN	
TK	TALL KING	
X	CROSS SLOT	
YF	CROSS FORK	

AIRFIELD PLOTS (A/F PAGES)

●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	FISHBED
FC	FRESKO
FC-D	FRESKO-D
FG	FAGOT
FH	FISHPOT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

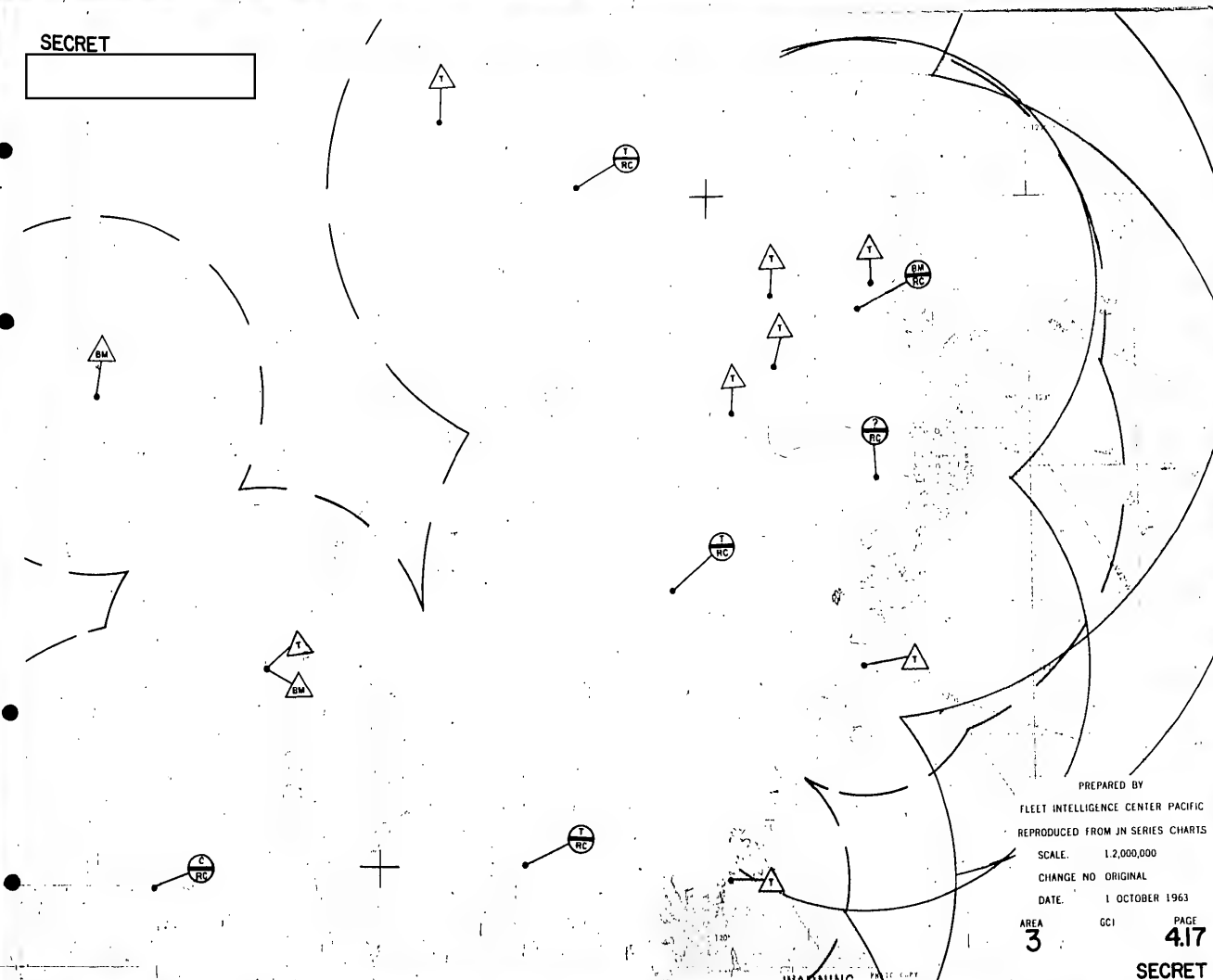
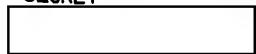
GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△	EW/GCI RADAR
⊖	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
BC	ROCK CAKE
SC	STONE CAKE
SK	SPONGE CAKE
SN	SIDE NET
	SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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<input type="checkbox"/>	RADAR COVERAGE BY A SINGLE RADAR
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<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊙	CONFIRMED GENERAL SAM SITE
⊖	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRAIL
SV	SHOOTER
W	WHEAT
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

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GCI PAGE 4.17

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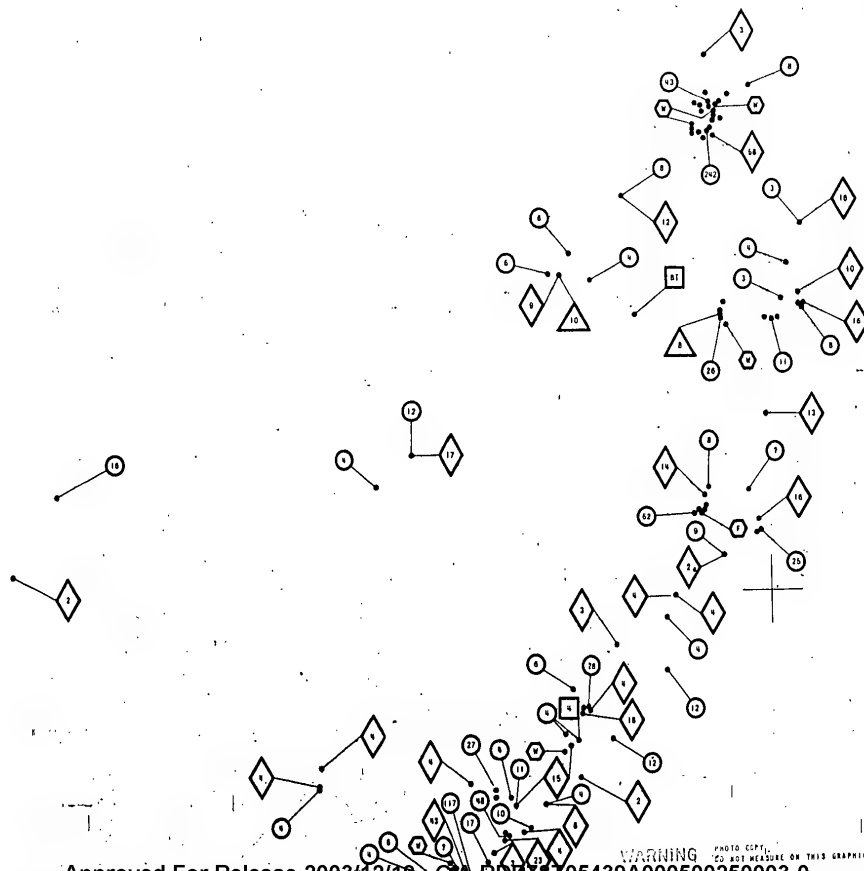
EARLY WARNING RADAR PLOTS (EW PAGES)		
○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
I	UNKNOWN	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
IK	"SKID" (CHINESE)	---
IL	BAR LOCK	---
IM	BIG MESH	---
C	SCR - 270 DA	---
D	DUMBO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FA	FORE REST	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
M	TACHI 18	
NI	NICH BIEVE	
J	JAP NK 1	
K	KNIFEWEST	
P	JAP NK 1 MOD 3 / JAP TYPE III	
R	HI-DUMBO	
SM	SLANT MESH	
SO	SO/SEE HOUSE	
SR	SPOON REST	
T	TOKEN	
TK	TALL KING	
X	CROSS SLOT	
XP	CROSS FORK	

AIRFIELD PLOTS (A/F PAGES)	
●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	FISHBED
FC	FRESKO
FC-D	FRESKO-D
FG	FACOT
FI	FISHBUT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊖	FW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
NC	NOCK CASE
SC	STONE CASE
SK	SPOON CASE
SN	SIDE NET
	SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE, GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)	
⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
⊖	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SUNVISOR
W	WHELF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

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AREA 3 SAM/AA PAGE 4.18

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EARLY WARNING RADAR PLOTS (EW PAGES)

○	EARLY WARNING (EW) RADAR
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
1	UNKNOWN
2K	"BEIJING" (CHINESE)
2L	BAR LOCK
2M	BIG MESH
C	SCR - 270 DA
D	DUMBO
FP	FLAT FACE
FR	FOUR REST
H	TACHI 1A
HI	HIGH GIVE
J	JAP PW 1
K	KNIFE REST
P	JAP PW 1 MID 3 / JAP TYPE III
R	HI-DUMBO
SM	SLANT MESH
SO	SO/BEE HOUSE
SK	SPOON REST
T	TOKEN
TK	TALL KING
X	CROSS SLUT
XV	CROSS FORK

AIRFIELD PLOTS (A/F PAGES)

- LOCATION OF AN AIRFIELD PRESUMEDLY SUPPORTING JET INTERCEPTIONS
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FB	VISHVED
FC	FRESKO
FC-D	FRESKO-D
FG	FACOT
FH	FISHHOT
FL	FLASHLIGHT
FM	FARMER
FT	FLOTTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△	EW/GCI RADAR
⊖	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
NC	WACK LAKE
SC	STORM CAKE
SE	SURGE CAKE
SN	SIDE NET
	SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
—	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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□	RADAR COVERAGE BY A SINGLE RADAR
□	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
□	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
⊙	GUN LAYING RADAR
□	SEARCH LIGHT CONTRAIL
V	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SURVEILLOR
W	WIDFT

AAA SITES

◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
	NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



HAN KOU
10 FC
20 FC
10 FC-D

SUAN PO
15 FC
15 FC

HSIANG TANG
10 FC
10 FC
10 FC-D

WU HU
30 FC

WU HSI
30 FC

CHIANG WAN
15 FC
15 FC

HUNG CHIAO
15 FC
15 FC

HANG CHOW
50 FC
10 FC-D

CHANG CHIAO
60 FC

CHU HSIEN
30 FC
20 FC
10 FC-D

LU CHIAO
25 FC
25 FC
10 FC-D

WAN TAI/FUCHOU
15 FC
15 FC

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AREA
3

A/F

PAGE
4.19

SECRET

EARLY WARNING RADAR PLOTS (EW PAGES)

○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
?	UNKNOWN	--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 500' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BK	"BKQ" (CHINESE)	
BL	BAR LOCK	--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BM	BIG MESH	
C	SCR - 270 DA	
D	DUNGO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FP	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FR	FORK REST	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
H	TACHI IS	
HI	HIGH SIEVE	
J	JAP HK 1	
K	KNIFE REST	
P	JAP HK 1 MOD 3 / JAP TYPE III	
R	HI-DUNGO	
SM	SLANT MESH	
SO	SO/BEE HOUSE	
SR	SPOON REST	
T	TWINE	
TK	TALL KING	
X	CROSS SLOT	
XF	CROSS FORK	

AIRFIELD PLOTS (A/F PAGES)

●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
	AIRCRAFT CODE
FB	FISHBED
FC	FRESKO
FC-D	FRESKO-D
FG	FACOT
FR	FISHROT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

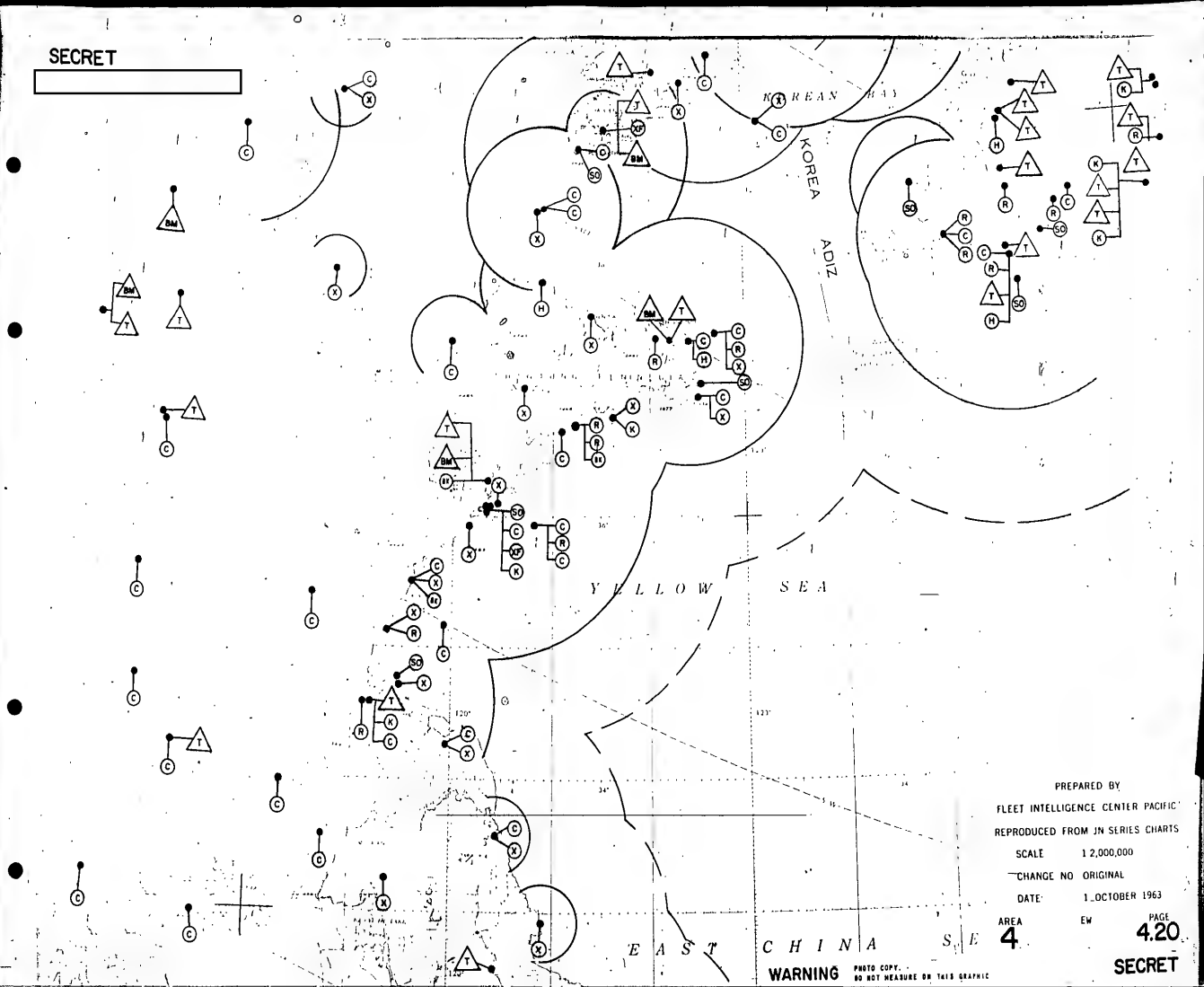
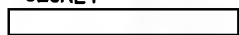
GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△	EW/GCI RADAR
⊙	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
MC	MOCK CAKE
SC	STONE CAKE
SK	SPOON CAKE
SN	SIDE NET
	SEE 1W LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
NOTE:	THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INDIVIDUAL RADARS AGAINST AIRCRAFT IN A HEAD-ON ASPECT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.
<input type="checkbox"/>	RADAR COVERAGE BY A SINGLE RADAR
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM)-SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊕	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
○	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SURVEILLANCE
W	WILDFY
	AAA SITES
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
	NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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DATE 1 OCTOBER 1963

AREA 4
PAGE 420
SECRET

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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 T UNKNOWN --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 BK "BKI" (CHINESE)
 NL BAR LOCK --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 BM BIG MESH
 C SCR - 270 BA
 D DUBO
 FF FLAT FACE
 FR FORK REST
 H TACHI 16
 HI HIGH SIEVE
 J JAP MK I
 K KNIFE REST
 P JAP MK I MOD 3 / JAP TYPE III
 R HI-DUBO
 SM SLANT MESH
 SO SO/SEE MOOSE
 SR SPOON REST
 T TOWN
 TK TAIL KING
 X CROSS SLOT
 XY CROSS FORK

☐ RADAR COVERAGE BY A SINGLE RADAR
☐ RADAR COVERAGE OF THE SEWARD APPROACHES BY TWO RADARS
☐ RADAR COVERAGE OF THE SEWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FB FISHED
 FC FRESKO
 FC-D FRESKO-D
 FG FAGOT
 FH FISHPOT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊕ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 WC ROCK CAKE
 SC STORK CAKE
 SK SPURGE CAKE
 SN SIDE NET
 SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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☐ RADAR COVERAGE BY A SINGLE RADAR
☐ RADAR COVERAGE OF THE SEWARD APPROACHES BY TWO RADARS
☐ RADAR COVERAGE OF THE SEWARD APPROACHES BY THREE OR MORE RADARS

SUBJECT TO AIR MISSILE (SAM) SITE, GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ⊙ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SUNVISOR
 W WHIFF

AAA SITES

◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

--



EARLY WARNING RADAR PLOTS (EW PAGES)

○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
T	UNKNOWN	— THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BK	"BEIJ" (CHINESE)	
BL	BAR LOCK	--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BH	BIG HESH	
C	SCR - 270 DA	
D	DUMBO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FR	FORK REST	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
H	TACHI 16	
HI	HIGH SIEVE	
J	JAP MK I	
K	KNIVEREST	
P	JAP MK I MOD 3 / JAP TYPE III	
R	HI-DUMBO	
SH	SLANT HESH	
SD	SO/REE HOUSE	
SR	SPOON REST	
T	TOKEN	
TK	TALL KING	
X	CROSS SLOT	
XF	CROSS FORK	

AIRFIELD PLOTS (AF PAGES)

- LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

VB	WISHED
VC	FRESKO
VC-D	FRESKO-D
FG	FAGOT
FH	FISHPOZ
FL	FLASHLIGHT
FM	FLAMER
FT	BITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△	EW/GCI RADAR
⊕	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
RC	ROCK CAKE
SC	STONE CAKE
SK	SPOON CAKE
SN	SIDE NET
	SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
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<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

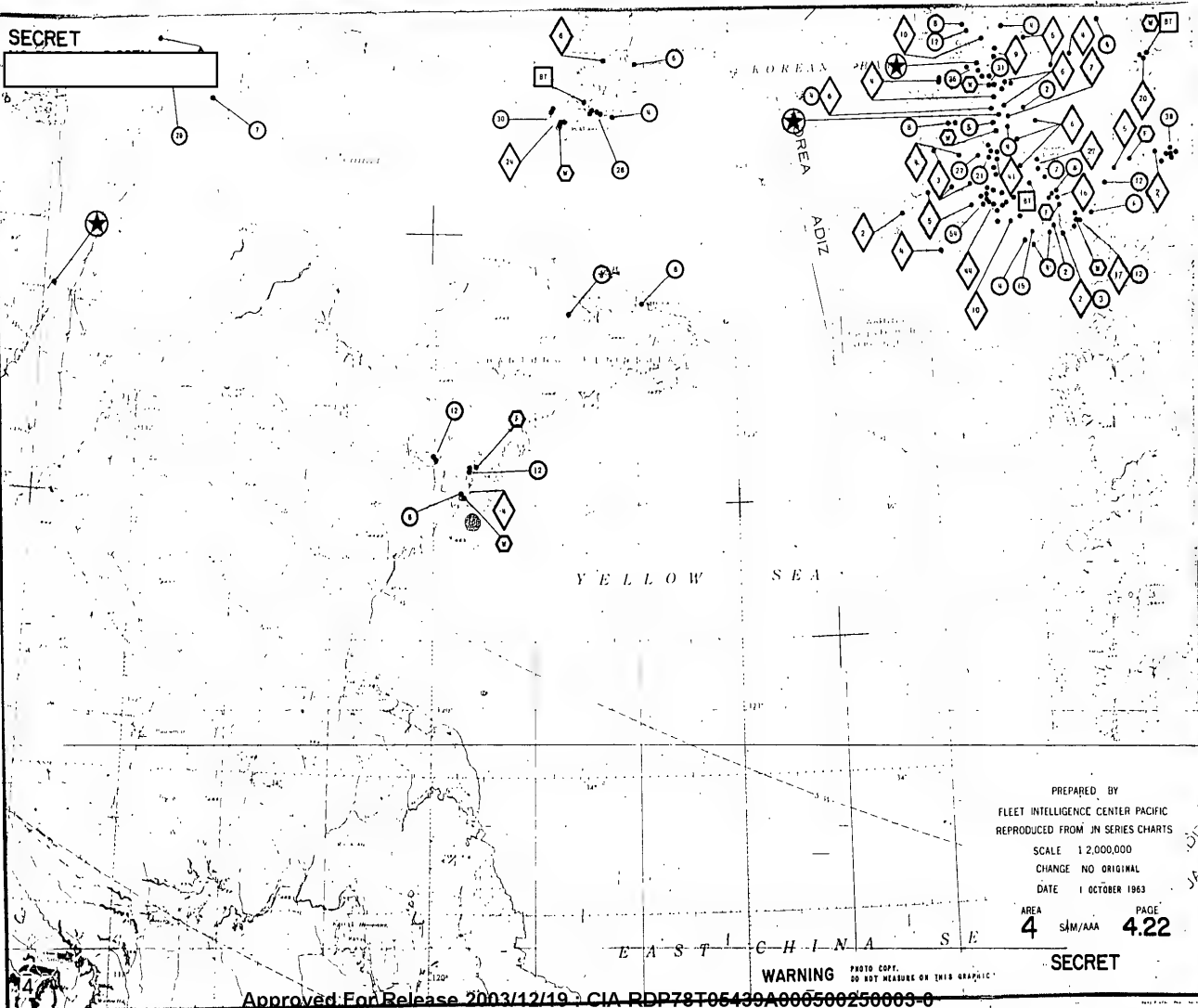
SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊙	CONFIRMED GENERAL SAM SITE
○	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
P	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SUNVISOR
W	WHELF

AAA SITES

◇	LIGHT AAA GUNS (21-75mm)
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	NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 T UNKNOWN --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 BK "BKID" (CHINESE)
 BL BAR LOCK --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 BW BIG MESH
 C SCR - 270 DA
 D DUMBO
 FF FLAT FACE
 FR FORK REST
 H TACHI 16
 HI HIGH SIEVE
 J JAP PW 1
 K KNIFEPOST
 P JAP PW 1 MOD 3 / JAP TYPE III
 R HI-DUMBO
 SH SLANT MESH
 SO SO/BEE HOUSE
 SR SPOON REST
 T TOKEN
 TK TALL KING
 X CROSS SLOT
 XY CROSS FORK

AIRFIELD PLOTS (A/P PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
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 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FB FISHBED
 FC FRESCO
 FC-D FRESCO-D
 FG FAGOT
 FH FISHHUT
 FL FLASHLIGHT
 FM FARMER
 FT FILTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊕ EW RADAR CO-LOCATED WITH HEIGHT FINDER (WF) RADAR TO FORM GCI UNITS
 RC ROCK CAKE
 SC STONE CAKE
 SK SKEW CAKE
 SN SING NET
 SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
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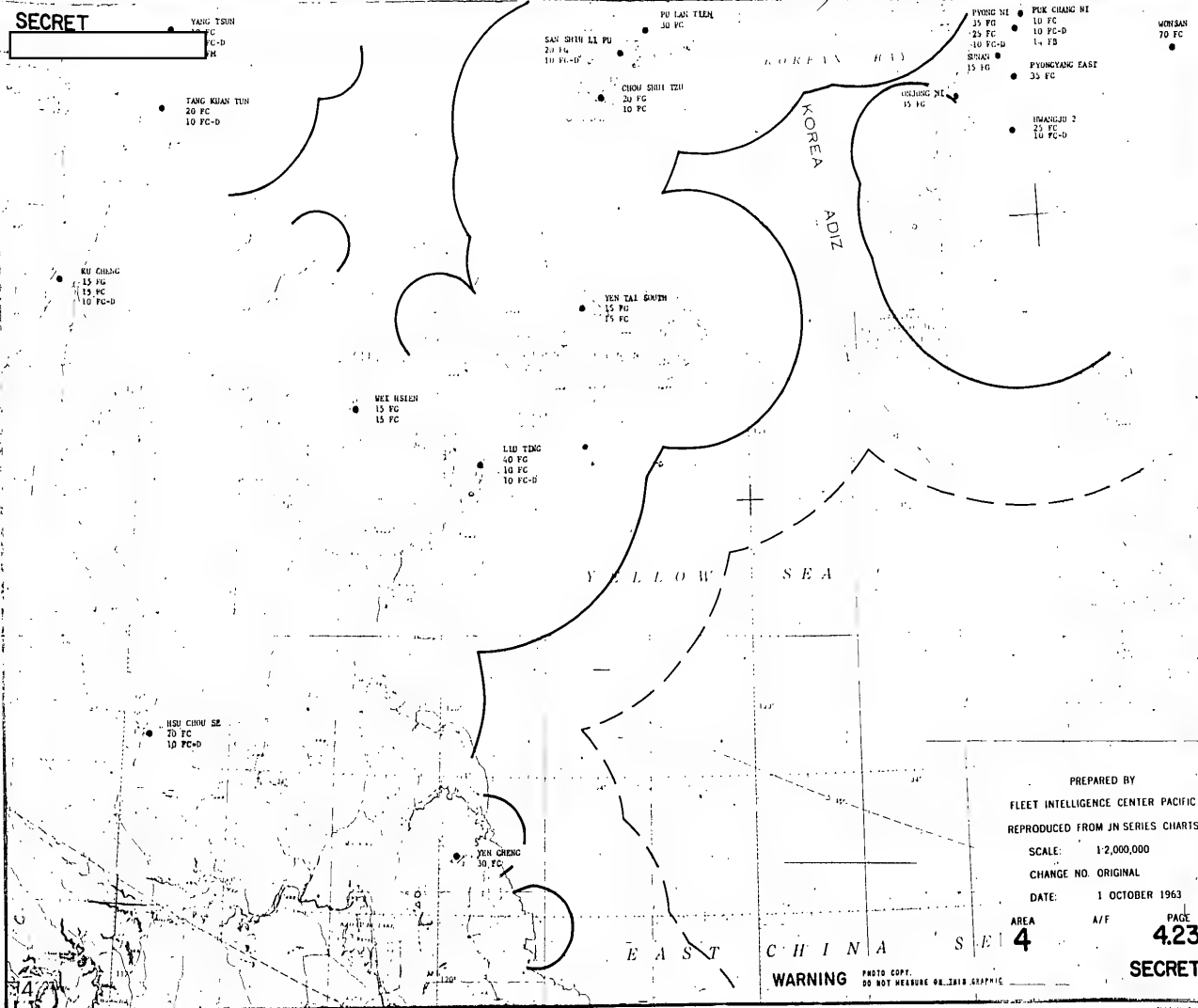
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⊕ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ☆ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FH FIRE WHEEL
 BT BEAM TRACK
 SV SURVIVOR
 W WHIFF

AAA SITES

◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
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 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

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DATE: 1 OCTOBER 1963
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PAGE 423
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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 T UNKNOWN
 BK "BKIN" (CHINESE)
 EL BAR LOCK
 BM BIG MESH
 C SCR - 270 BA
 D DUMBO
 FF FLAT FACE
 FR FORK REST
 H TACHI 16
 HI HIGH SIEVE
 J JAP NK 1
 K KNIFEREST
 P JAP NK 1 MOD 3 / JAP TYPE 111
 R HI-DUMBO
 SH SLANT MESH
 SO SO/BEZ HOUSE
 SR SPOON REST
 T TOKEN
 TK TALL KING
 X CROSS SLOT
 XV CROSS FORK

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 [] RADAR COVERAGE BY A SINGLE RADAR
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GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

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 KC ROCK CAKE
 SC STONE CAKE
 SK SPONGE CAKE
 SN SIDE NET
 SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
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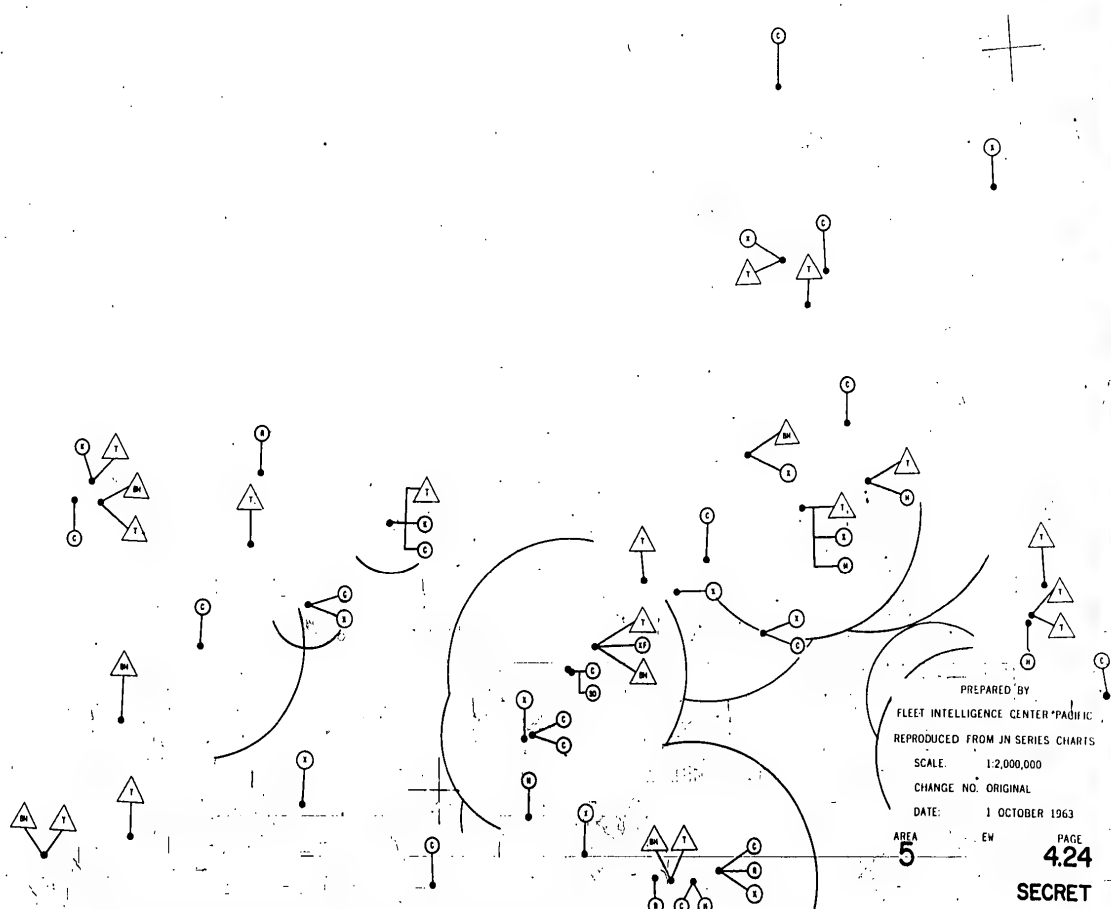
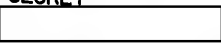
AIRCRAFT CODE

FB FISHED
 FC FRENCO
 FC-D FRENCO-D
 FG FAGUT
 FH FIBUPOT
 FL FLASHLIGHT
 FM FARMER
 FT FILTER

SURFACE TO AIR MISSILE (SAM) SITE, GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊕ CONFIRMED SA-2 SITE
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 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 ST BEAM TRACK
 SV SURVIVOR
 W WHIFF
 AAA SITES
 ◇ LIGHT AAA GUNS (21-75mm)
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 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

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AREA
5

PAGE
4.24

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EARLY WARNING RADAR PLOTS (EW PAGES)

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 BM BIG MESH
 C SCR - 270 DA
 D DUMBO ☐ RADAR COVERAGE BY A SINGLE RADAR
 FF FLAT FACE ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 FK FORK RUST ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
 H TACHT 18
 HI HIGH SIEVE
 J JAP MK I
 K KNIFEKIST
 P JAP MK I MOD 3 / JAP TYPE III
 R HI-DUMBO
 SM SLANT MESH
 SO SO/SEE HOUSE
 SR SPOON REST
 T TOKEN
 TK TALL KING
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 FG FACOT
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 FM FARMER
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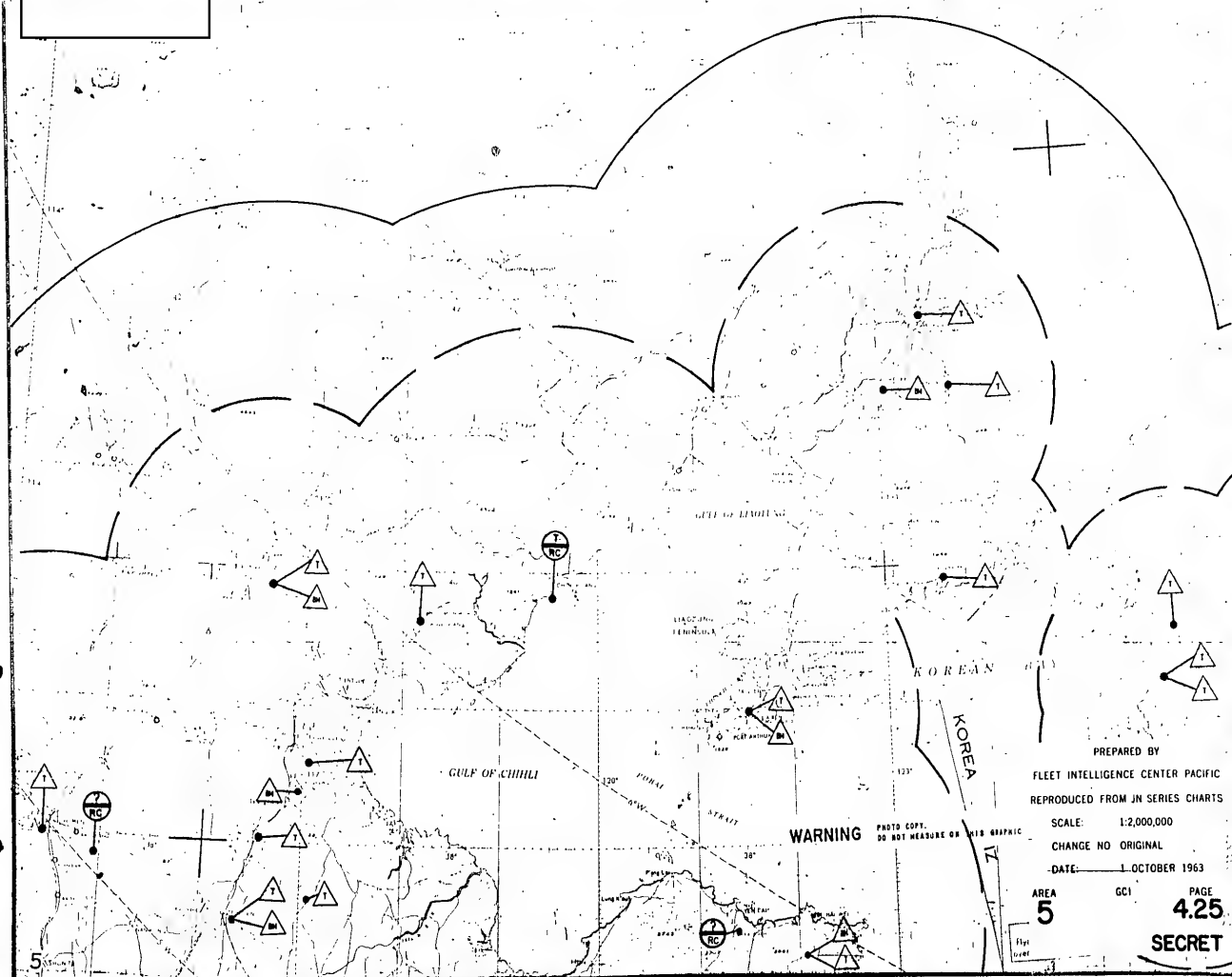
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 SC STONE CAKE
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 BM BIG MESH
 C SCR - 230 DA
 D DUMBO ☐ RADAR COVERAGE BY A SINGLE RADAR
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 HI HIGH SIEVE
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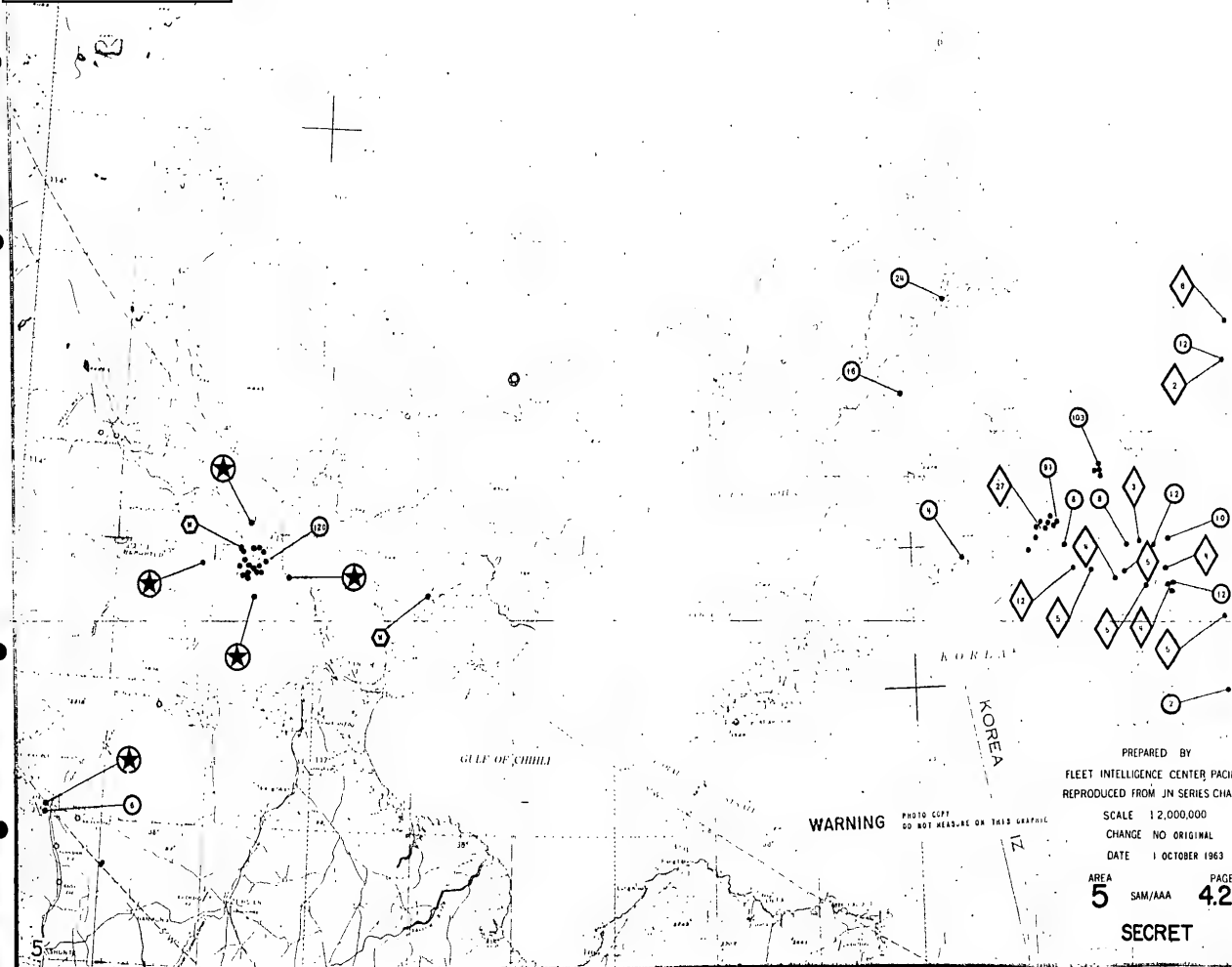
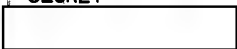
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 SC STONE CAKE
 SK SPONGE CAKE
 SN SIDE NET
 SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
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☐ RADAR COVERAGE BY A SINGLE RADAR
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 BV SURVIVOR
 W WHIFF
 AAA SITES
 ◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



WARNING

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DO NOT HEADLINE ON THIS GRAPHIC

PREPARED BY
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SCALE 12,000,000
CHANGE NO ORIGINAL
DATE 1 OCTOBER 1963

AREA 5 SAM/AAA PAGE 4.26

SECRET

EARLY WARNING RADAR PLOTS (EW PAGES)	
○	EARLY WARNING (EW) RADAR
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
I	UNKNOWN
BK	"BKI" (CHINESE)
BL	BAR LOCK
DM	BIG MESH
C	SCR - 270 DA
D	DUMBU
FF	FLAT FACE
FR	FORK REST
H	TACHI 18
HI	HIGH SIEVE
J	JAP MK I
K	KNIFE REST
P	JAP MK I MOD 3 / JAP TYPE III
R	HI-DUMBU
SM	SLANT MESH
SO	SO/SEE HOUSE
SR	SPOON REST
T	TOWER
TK	TALL KING
X	CROSS SLOT
XF	CROSS FORK

AIRFIELD PLOTS (A/F PAGES)	
●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
—	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	FISHER
FC	FRESCO
FC-D	FRESCO-D
FG	FAGOT
FI	FISHNET
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊖	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
RC	RUCK CASE
SC	STONE CASE
SK	SKEW CASE
SN	SIDE NET
SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS	
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE, GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)	
⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
⊗	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SUNVISOR
W	WATERY
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

SECRET



EARLY WARNING RADAR PLOTS (EW PAGES)

○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
T	UNKNOWN	--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BK	"BANK" (CHINESE)	
BL	BAR LOCK	--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 5000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BM	BIG MESH	
C	SCR - 270 DA	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
D	DUMBO	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
FR	FORK REST	
H	TACHI IN	
HI	HIGH SIEVE	
J	JAP MK I	
K	KNIFEREST	
P	JAP MK I MOD 3 / JAP TYPE III	
R	HI-DUMBO	
SN	SLANT MESH	
SD	SO/BEE HOUSE	
SR	SPOON REST	
T	TOKEN	
TK	TALL KING	
X	CROSS SLOT	
YF	CROSS FORK	

AIRFIELD PLOTS (A/F PAGES)

- LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

VB	VISIBED
FC	FRESCO
FO-D	FRESCO-D
FC	WADY
YH	FISHPUT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

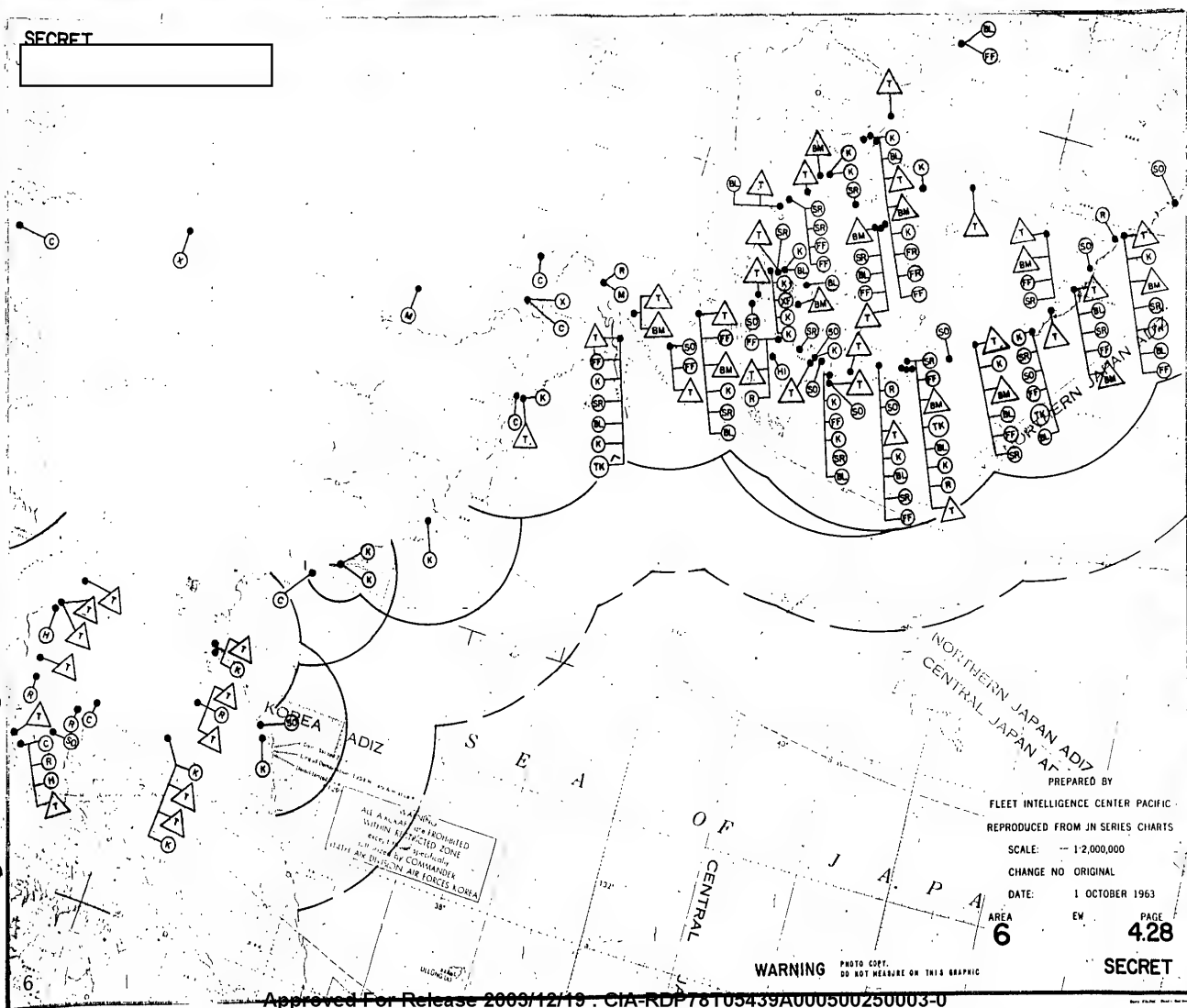
GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△	EW/GCI RADAR
⊙	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
BC	BUCK CAKE
SC	STONE CAKE
SK	SHOCK CAKE
SN	SIDE NUT
	SEE EW INDEX FOR EARLY WARNING RADAR ABBREVIATIONS
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
⊙	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SUNVISOR
W	WHIFF
	AAA SITES
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
	NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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CENTRAL JAPAN ADIZ
PREPARED BY
FLEET INTELLIGENCE CENTER PACIFIC
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SCALE: 1:2,000,000
CHANGE NO ORIGINAL
DATE: 1 OCTOBER 1963
EW
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6
AREA

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SECRET

EARLY WARNING RADAR PLOTS (EW PAGES)		
○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
7	UNKNOWN	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BK	"BEKA" (CHINESE)	
BL	BAR LOCK	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BM	BIG MESH	
C	SCR - 270 BA	
D	DUMBO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FR	FORK REST	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
H	TACHI 18	
HI	HIGH SIEVE	
J	JAP MK I	
K	KNIVEREST	
P	JAP MK I MOD 3 / JAP TYPE III	
R	HI-DUMBO	
SH	SLANT MESH	
SO	SO/BEE HOUSE	
SR	SPYON REST	
T	TOKEN	
TK	TALL KING	
X	CROSS SLOT	
XF	CROSS FORK	

AIRFIELD PLOTS (A/F PAGES)	
●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
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---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	FISHERD
FC	FRESKO
FC-D	FRESKO-D
FG	YACOT
FH	FISHPO
FL	FLASHLIGHT
FM	FARMER
FT	FIFTE

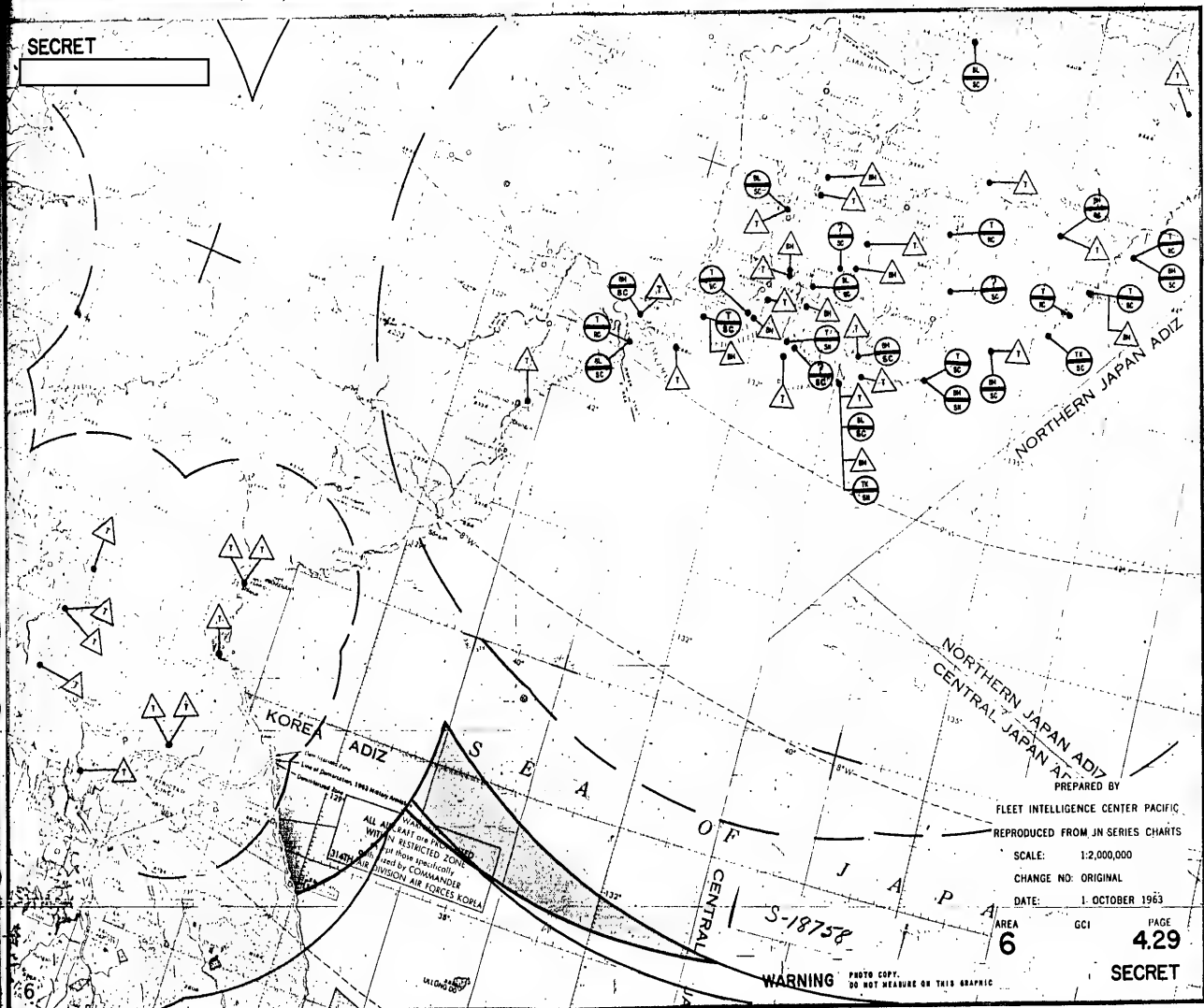
GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊖	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
NC	NOCK CAKE
SC	STONE CAKE
SK	SPONGE CAKE
SN	SINK NET
SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS	
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)	
⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊙	CONFIRMED GENERAL SAM SITE
⊖	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
ST	BEAM TRACK
SV	SUNVISOR
W	WHIFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
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EARLY WARNING RADAR PLOTS (EW PAGES)	
○	EARLY WARNING (EW) RADAR
△	EARLY WARNING / GROUND CONTINUED INTERCEPT (GCI) RADAR
?	UNKNOWN
BK	"BKID" (CHINESE)
BL	BAR LOCK
BH	BIG MESH
C	SCR - 270 DA
D	DUMBO
FF	FLAT FACE
FR	FORK REST
H	TACHI 18
HI	HIGH SIVE
J	JAP PK 1
K	KNIFERST
P	JAP PK 1 MOD 3 / JAP TYPE III
R	HI-DUMBO
SH	SLANT MESH
SO	SO/SEE HOUSE
SS	SPOON REST
T	TOKEN
TK	TALL KING
X	CROSS SLOT
XZ	CROSS FORK

AIRFIELD PLOTS (A/P PAGES)	
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AIRCRAFT CODE	
FB	VISHNEV
YC	FRESKO
YC-D	FRESKO-D
YG	FACOT
YH	VISHNOV
YL	FLASHLIGHT
YH	FARMER
YV	VITTE

GROUND CONTINUED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊕	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
MC	MOCK CAKE
SC	STONE CAKE
SK	SINCE CAKE
SN	SIDE NET
---	SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
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⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
○	CUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAN TRACE
BV	SUNVISOR
V	WHIFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
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NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 ? UNKNOWN
 BK "BKID" (CHINESE)
 NL BAR LOCK
 BM BIG MESH
 C SCR - 270 DA
 D DUMBO
 FF FLAT FACE
 FR FORK REST
 H TACHI 18
 HI HIGH EYE
 J JAP PW 1
 K KNIFE REST
 P JAP PW 1 WED 3 / JAP TYPE III
 R HI-DUMBO
 SH SLANT MESH
 SO SO/SEE HOUSE
 SR SPOON REST
 T TOKEN
 TK TALL KING
 X CROSS SLOT
 XF CROSS FORK

THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
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AIRCRAFT CODE
 FB FISHER
 FC FRESKO
 FC-D FRESKO-D
 FG WAGON
 FH FISHPOT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊗ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 RC ROCK CAKE
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 SEE LW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
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 * CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ⊙ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SUNDIAL
 W WHITE

AAA SITES
 ◇ LIGHT AAA GUNS (21-75mm)
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EARLY WARNING RADAR PLOTS (EW PAGES)	
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T	UNKNOWN
BK	"BKKY" (CHINESE)
BL	BAR LOCK
BH	BIG MESH
C	SCR - 270 DA
D	DUMBO
FF	FLAT FACE
FR	FORK REST
H	TACHI 18
HI	HIGH SIEVE
J	JAP W 1
K	KNIFEMST
P	JAP W 1 MED 3 / JAP TYPE III
R	HI-DUMBO
SH	SLANT MESH
SO	SO/SEE HOUSE
SR	SPOON REST
T	TWEN
TK	TALL KING
X	CROSS SLOT
XY	CROSS FORK

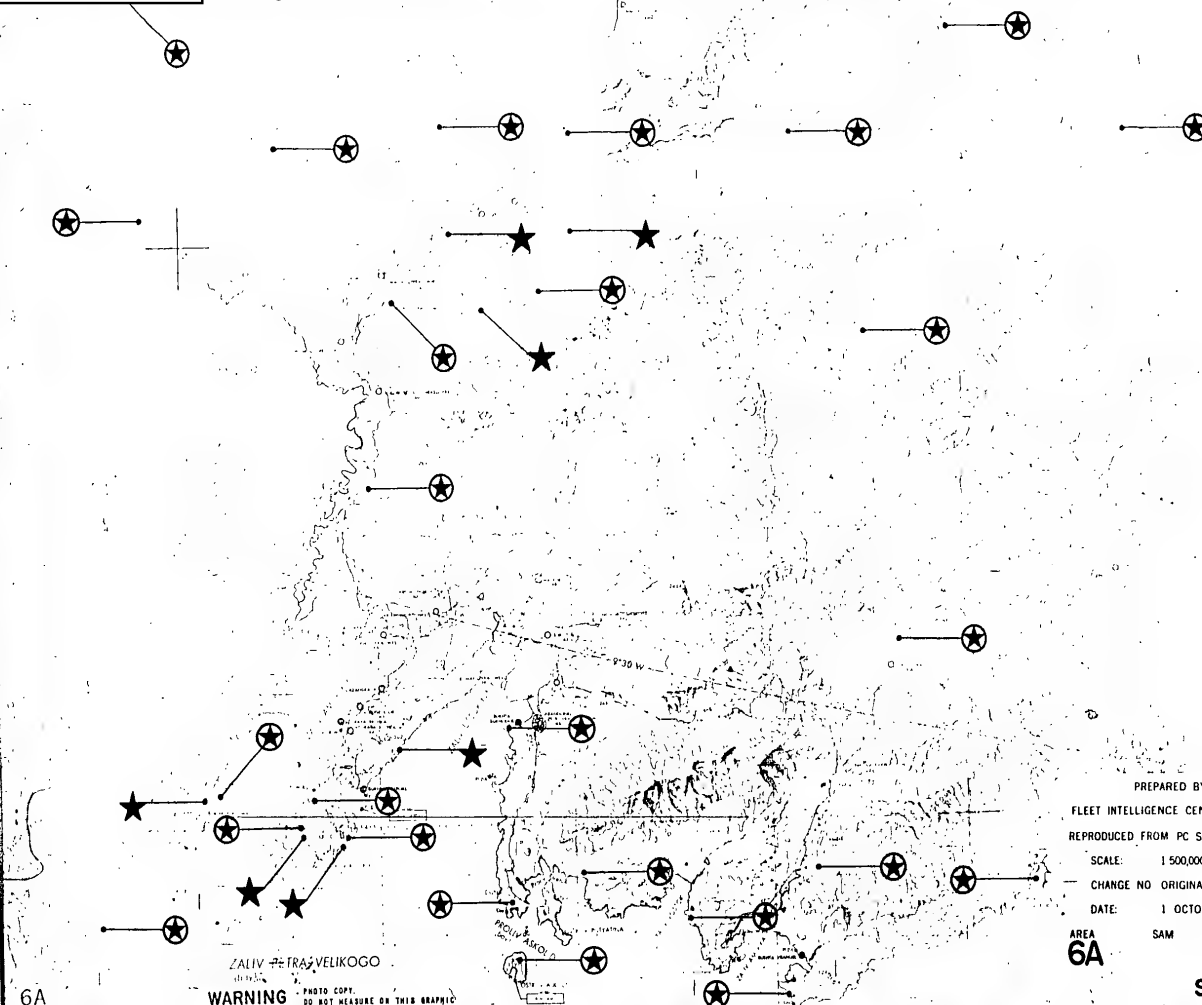
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FB	FISHBED
FC	FRESKO
FC-D	FRESKO-D
FG	FACOT
FI	FISHNET
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

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BT	BEAM TRACK
SV	SUNVISOR
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AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
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NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

SECRET

[Redacted]



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FLEET INTELLIGENCE CENTER PACIFIC
REPRODUCED FROM PC SERIES CHARTS
SCALE: 1 500,000
CHANGE NO ORIGINAL
DATE: 1 OCTOBER 1963

AREA
6A
SAM
PAGE
4.32
SECRET

EARLY WARNING RADAR PLOTS (EW PAGES)

○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
T	UNKNOWN	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BE	"BEIJING" (CHINESE)	
EL	BAR LOCK	
EM	BIG MESH	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
C	SCR - 270 DA	
D	DUMBO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FA	FORK REST	
H	TACHI 18	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
HI	HIGH SIEVE	
J	JAP MK I	
K	KNIFE REST	
P	JAP MK I MOD 3 / JAP TYPE III	
R	HE-DUMBO	
SH	SLANT MESH	
SO	SO/SEE HOUSE	
SR	SPOON REST	
T	TOKEN	
TK	TALL KING	
X	CROSS SLOT	
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●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
—	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
VB	VISIBED
VC	FRESCO
VC-D	VERNEED-D
FG	FAGOT
FH	FISHPOY
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

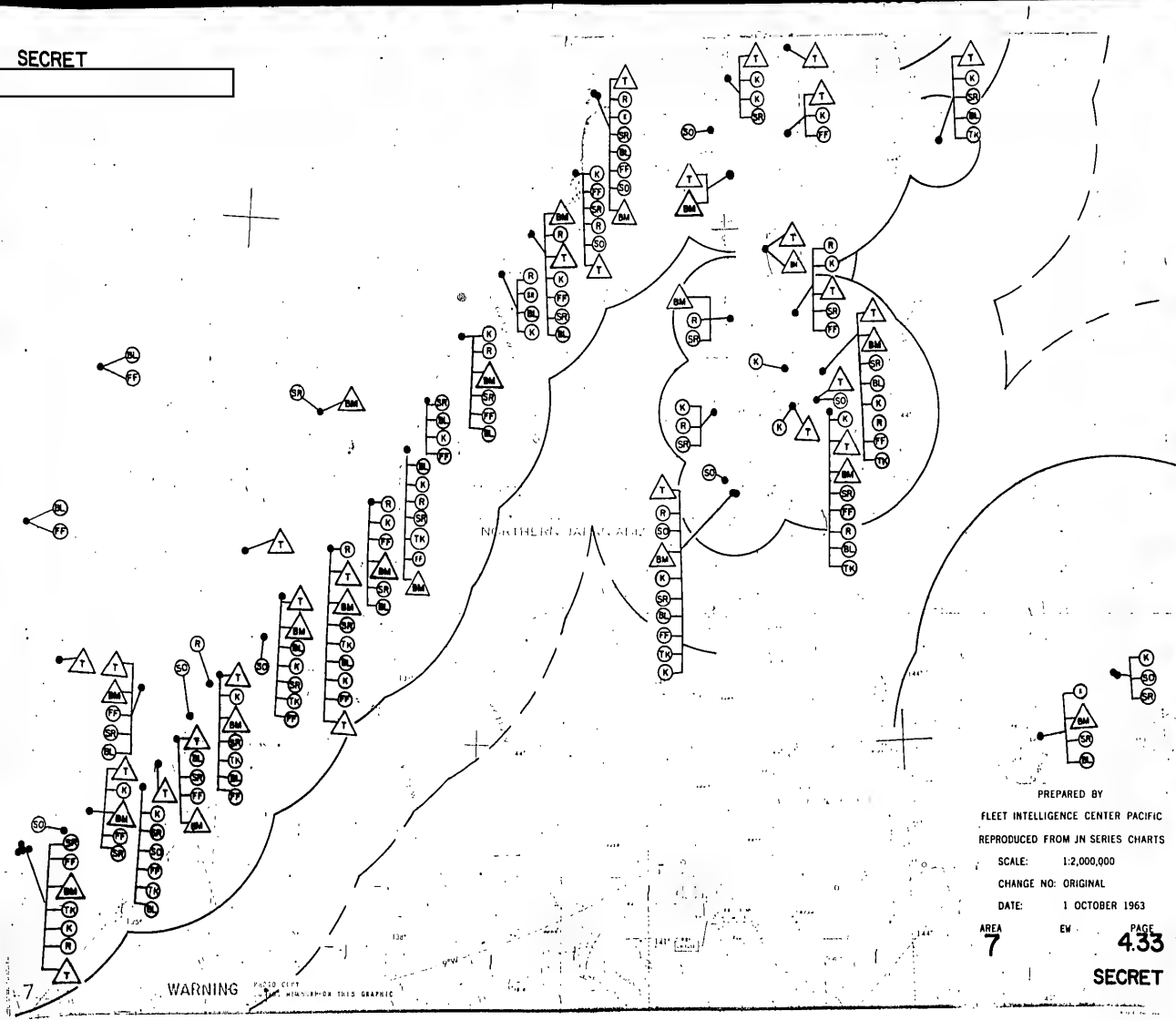
GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△	EW/GCI RADAR
⊖	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
BC	ROCK CAKE
SC	STONE CAKE
SK	SPOON CAKE
SN	SIDE NET
SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS	
—	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INDIVIDUAL RADARS AGAINST AIRCRAFT IN A HEAD-ON ASPECT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.	
<input type="checkbox"/>	RADAR COVERAGE BY A SINGLE RADAR
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAS) SITE/GUN LAYING RADAR AND AAA PLOTS (SAS/AAA PAGES)

⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊙	CONFIRMED GENERAL SAM SITE
○	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SURVEILLOR
M	WHIFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

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AREA
7

EW

PAGE
4.33

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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 T UNKNOWN
 BK "BLACK" (CHINESE)
 BL BAR LOCK
 BM BIG MESH
 C SCR - 270 DA
 D DUMBO
 FF FLAT FACE
 FR FORK REST
 H TACHI 18
 HI HIGH SIEVE
 J JAP MC 1
 K KNIFEREST
 P JAP MC 1 MED 3 / JAP TYPE III
 R HI-DUMBO
 SH SLANT MESH
 SO SO/SEE HOUSE
 SR SPOON REST
 T TONIN
 TK TALL KING
 X CROSS SLOT
 XY CROSS FORK

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

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AIRCRAFT CODE

FB FISHBED
 FC FRESKO
 FC-D FRESKO-D
 FG FACOT
 FH FISHPOT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊕ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 KC ROCK CAKE
 SC STONE CAKE
 SK SKEGEL CAKE
 SN SINE NET

SLE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS

--- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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□ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

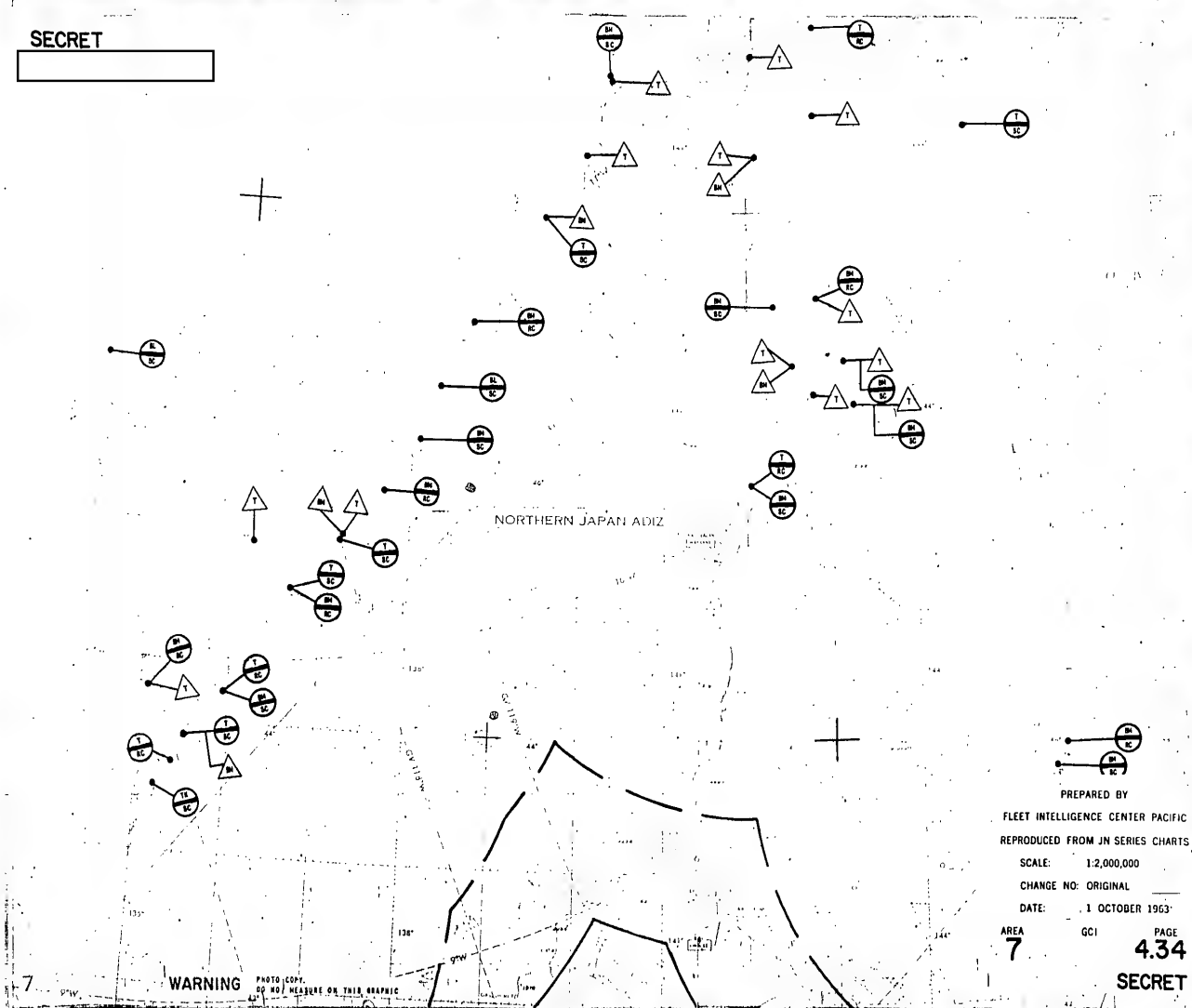
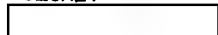
⊕ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ⊙ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SURVIVOR
 M MINTIFF

AAA SITES

◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)

NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



EARLY WARNING RADAR PLOTS (EW PAGES)

○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
T	UNKNOWN	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BK	"BKIQ" (CHINESE)	
BL	BAR LOCK	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BH	BIG MESH	
C	SCR - 270 DA	
D	DUMBO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FR	FORK REST	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
H	TACHI 16	
HI	HIGH SIEVE	
J	JAP PW 1	
K	KNEIFERST	
P	JAP PW 1 MOD 3 / JAP TYPE III	
R	HI-DUMBO	
SM	SLANT MESH	
SO	SO/SEE HOUSE	
SR	SPOON REST	
T	TOKEN	
TK	TALL KING	
X	CROSS SLOT	
XV	CROSS YOK	

AIRFIELD PLOTS (A/F PAGES)

●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTION
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---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	FISHBED
FC	FUSCO
FC-D	FUSCO-D
FG	FAGOT
FH	FISHPOT
FL	FLASHLIGHT
FM	FANER
FT	FITTER

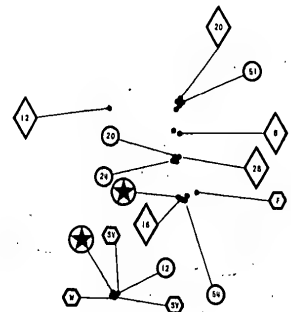
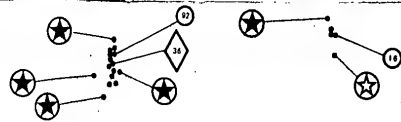
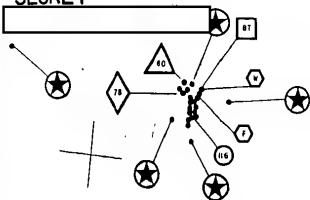
GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△	EW/GCI RADAR
⊕	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
KC	ROCK CAKE
SC	STONE CAKE
SK	SPOON CAKE
SN	SIDE NET
SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS	
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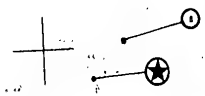
SURFACE TO AIR MISSILE (SAM) SITE, GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊙	CONFIRMED GENERAL SAM SITE
○	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
Y	FIRE CAN
FW	FIRE WHIZ
BT	BEAM TRACK
SV	SUNVISION
W	WHIFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

SECRET



NORTHERN JAPAN ADIZ



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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 1 UNKNOWN THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 BK "BADA" (CHINESE)
 BL BAR LOCK --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 BM BIG MESH
 C SCR - 270 DA
 D DUNGO ☐ RADAR COVERAGE BY A SINGLE RADAR
 FF FLAT FACE ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 FR FORK REST ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
 H TACHI 18
 HI HIGH SIEVE
 J JAP MK I
 K KNIFESEY
 P JAP MK I MOD 3 / JAP TYPE III
 R HI-DUNGO
 SK ELAPY MESH
 SO SO/REE HOUSE
 SR SPOON REST
 T TOWN
 TK TALL KING
 X CROSS SLOT
 XP CROSS TONE

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊙ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 RC ROCK CAKE
 SC STONE CAKE
 SK SPONGE CAKE
 SN SIDE NET
 SEE EW LARGED FOR EARLY WARNING RADAR ABBREVIATIONS
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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AIRCRAFT CODE

FB FISHBED
 FC FRESKO
 FC-D FRESKO-B
 FG FAGOT
 FH FISHPOT
 FL FLEASHEATH
 FM FARMER
 FT FITTER

SURFACE TO AIR MISSILE (SAM) SITE, GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ⊙ GUN LAYING RADAR
 ⊖ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAN TRACK
 SV SURVEILLANCE
 W WHIFF

AAA SITES

◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



• KHABAROVSK/BLAGODATNOYE
32 FC

VERINO
31 FC
11 PH
11 PH
11 PL

• SOVetskaya GAVAN-VANINO
21 FC
11 FC-D

• DOLINSK
10 FC
11 FC-D
11 PH

• VELIKAYA KEM
32 FC

• SANDAGOU
32 FC

• SEMNOVODSK
32 FC

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AREA
7

A/F

PAGE
4.36

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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (EW/GCI) RADAR
 ? UNKNOWN
 BK "BEIJ" (CHINESE)
 BL BAR LOCK
 BM BIG MESH
 C SCR - 270 DA
 D DUNGO
 FF FLAT FACE
 FR FORK REST
 H TACHI 18
 HI HIGH SIEVE
 J JAP NK 1
 K KNIFE REST
 P JAP NK 1 MOD 3 / JAP TYPE III
 R HI-DUNGO
 SM SLANT MESH
 SO SO/SEE HOUSE
 SR SPOON REST
 T TONES
 TK TALL KING
 X CROSS SLOT
 XY CROSS FORK

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

□ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

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AIRCRAFT CODE

FB FISHER
 FC FRESCO
 FC-D FRESCO-D
 FG FAGOT
 FH FISHPO
 FL FLASHLIGHT
 FM FARMER
 FT FILTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊕ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 WC WICK CAGE
 SC STORE CAGE
 SK SPOON CAGE
 SN SINE NET

SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS

--- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
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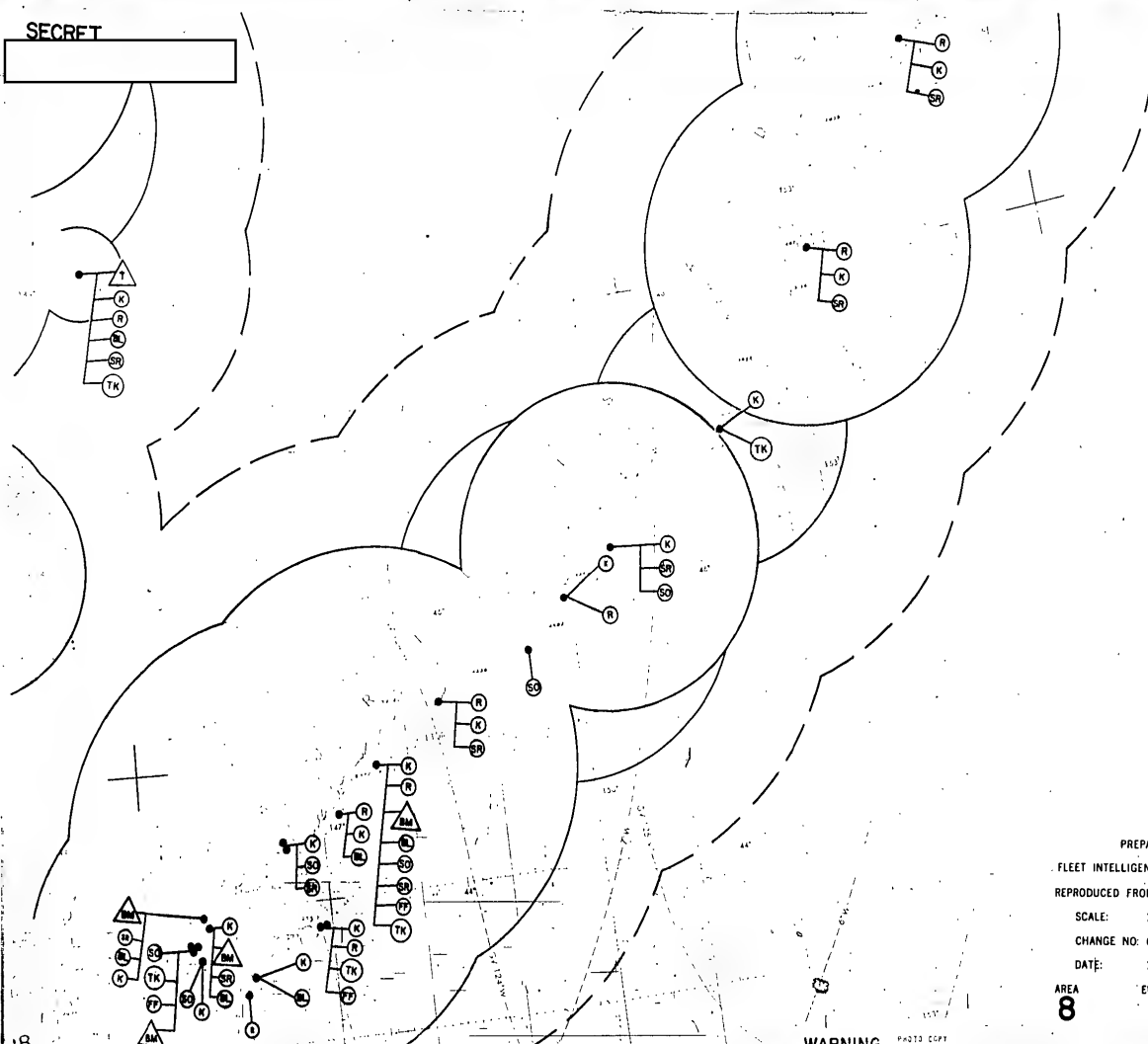
⊗ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ⊙ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHIEL
 BT BEAM TRACK
 SV SURVIVOR
 W WHIFF

AAA SITES

◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
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NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
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2K "BEIN" (CHINESE)

2L BAR LOCK --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

2M BIG MESH

2C SCR - 270 DA

2D DUNDO ☐ RADAR COVERAGE BY A SINGLE RADAR

2F FLAT FACE ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS

2R FORK REST ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

2E TACHI 16

2H HIGH SIEVE

2J JAP MK I

2K KNIFEHEST

2P JAP MK I MOD 3 / JAP TYPE III

2R UL-DUNDO

2M SLANT MESH

2O SO/EE HOUSE

2R SPOON REST

2T TOKEN

2K TALL KING

2X CROSS SLOT

2Y CROSS FORK

AIRFIELD PLOTS (A/F PAGES)

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--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

YB FISHBONE

YC FRESKO

YC-D FRESKO-D

YF FACOT

YH FISHBONE

YI FLASHLIGHT

YJ FARMER

YK FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR

○ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS

2C ROCK CAKE

2G STONE CAKE

2K SPONGE CAKE

2M SIDE MUT

SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS

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☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS

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SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊙ CONFIRMED SA-2 SITE

★ CONFIRMED SA-3 SITE

⊙ CONFIRMED GENERAL SAM SITE

□ GUN LAYING RADAR

□ SEARCH LIGHT CONTROL

F FIRE CAN

FW FIRE WHEEL

BT BEAM TRACK

SV SUPERVISOR

W WHIFF

AAA SITES

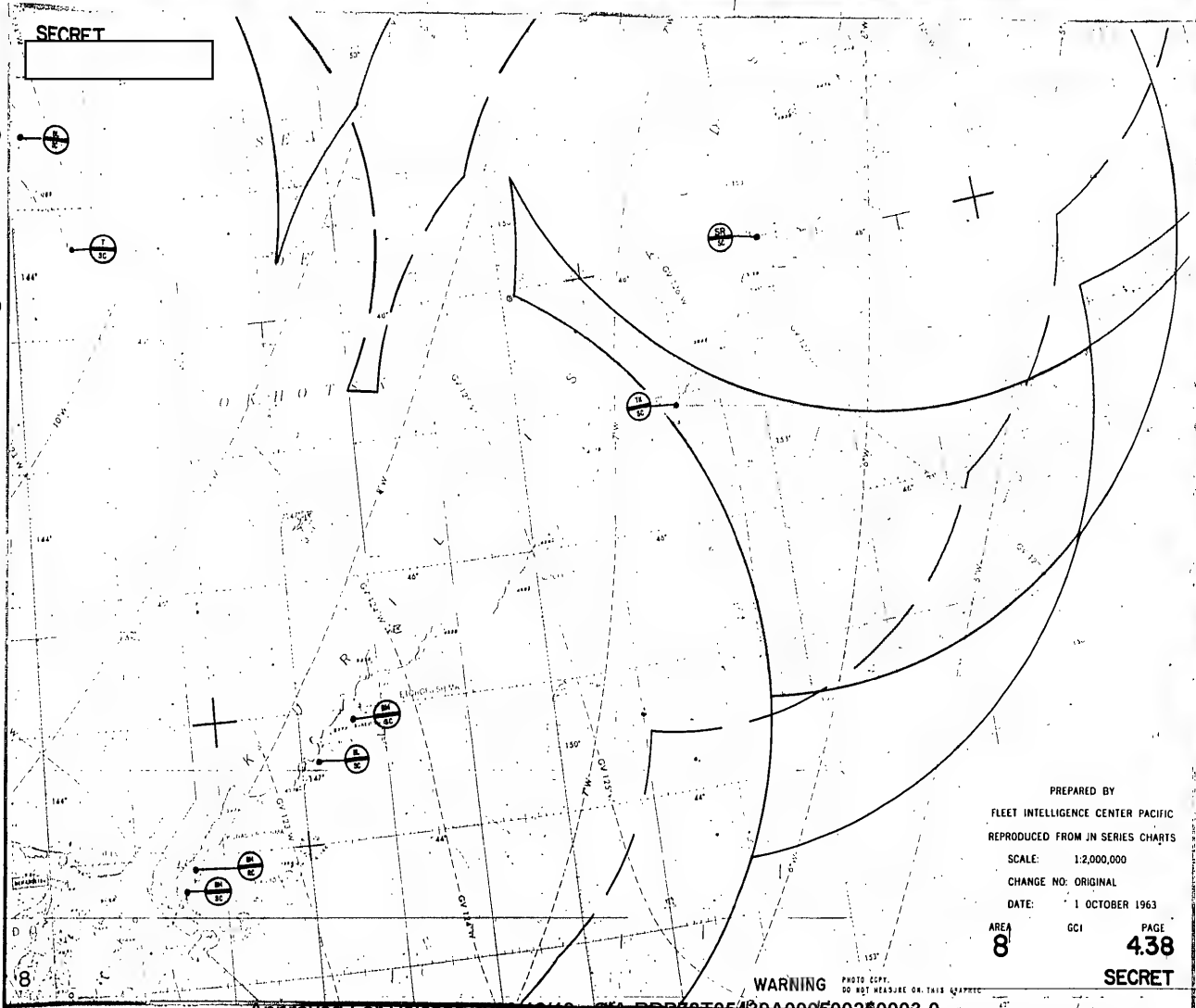
◇ LIGHT AAA GUNS (21-75mm)

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△ HEAVY AAA GUNS (101mm and above)

NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



EARLY WARNING RADAR PLOTS (EW PAGES)

- EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 1 UNKNOWN
 2 "BKA" (CHINESE)
 3 BAR LOCK
 4 BIG MESH
 5 SCR - 270 BA
 6 DUMBO
 7 FLAT FACE
 8 FORK REST
 9 TACHE 18
 10 HIGH SIEVE
 11 JAP PW 1
 12 KNIFE REST
 13 JAP PW 1 MOD 3 / JAP TYPE 111
 14 HI-DUMBO
 15 SLANT MESH
 16 SO/REE HOUSE
 17 SPOON REST
 18 TOKEN
 19 TALL KING
 20 CROSS SLOT
 21 CROSS FORK
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
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- AIRCRAFT CODE
 FB FISHBED
 FC FRESKO
 FC-D FRESKO-D
 FG FAGOT
 FH FISHNOT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

- △ EW/GCI RADAR
 ⊕ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 RC ROCK CAKE
 SC STONE CAKE
 SK SPURGE CAKE
 SN SILE NET
 SHF EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
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 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

- ⊗ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ⊕ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SUNVERGE
 W WHIFF
- AAA SITES
 ◇ LIGHT AAA GUNS (21-5mm)
 ○ MEDIUM AAA GUNS (75-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

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ILLEGIB

Approved For Release 2003/12/19 : CIA-RDP78T05439A000500250003-0

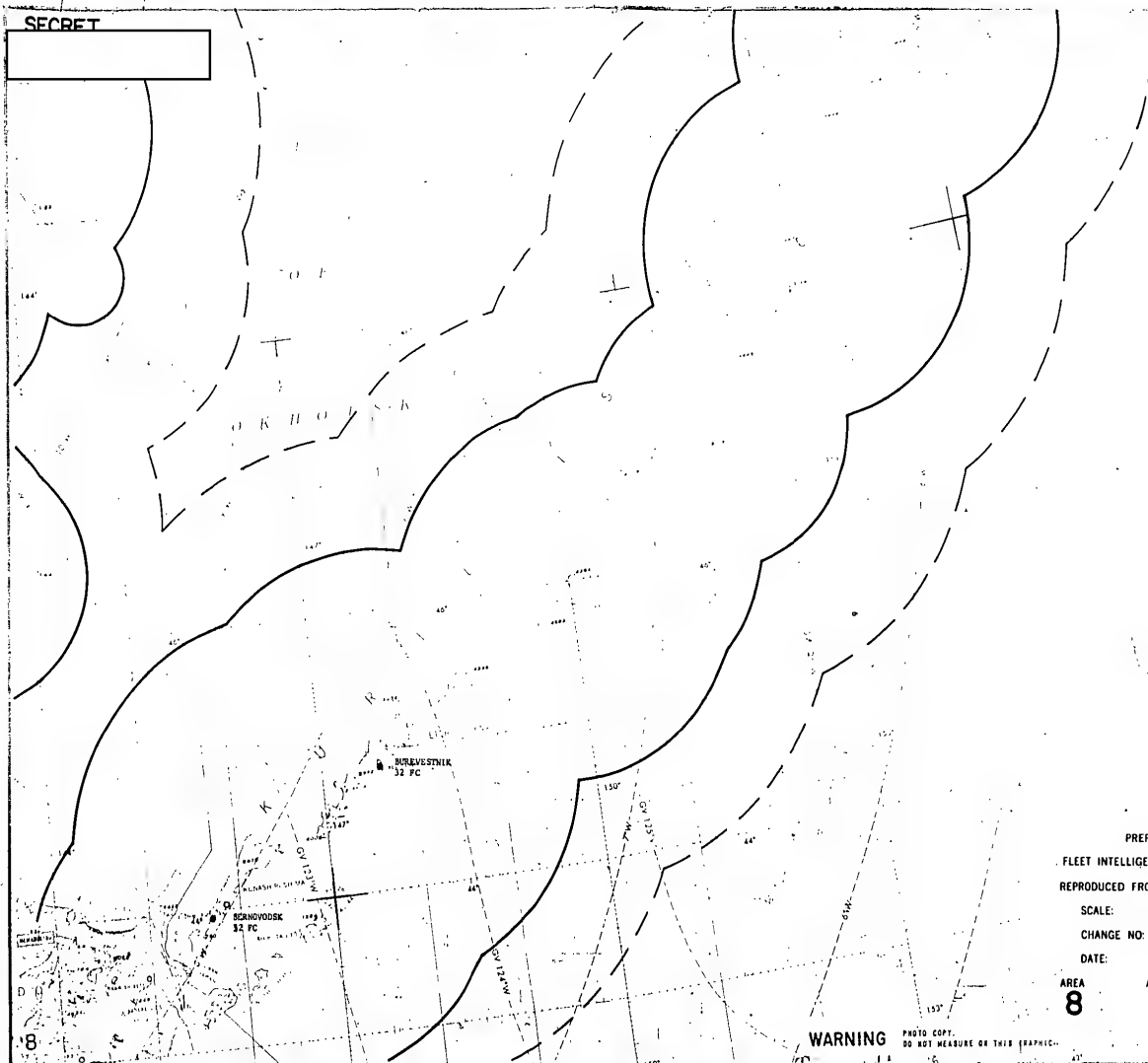
EARLY WARNING RADAR PLOTS (EW PAGES)		
○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
T	UNKNOWN	— THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BK	"BKM" (CHINESE)	--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BL	BAR LOCK	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
BM	BIG MESH	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
C	CCR - 270 DA	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
D	DUMBO	
FF	FLAT FACE	
FR	FORK REST	
H	TACHI 18	
HI	HIGH SIEVE	
J	JAP MK I	
K	KNIVEREST	
P	JAP MK I MOD 3 / JAP TYPE III	
R	HI-DUMBO	
SH	SLANT MESH	
SO	SO/LEE HOUSE	
SR	SPOON REST	
T	TOKEN	
TK	TALL KING	
X	CROSS SLOT	
YF	CROSS FORK	

AIRFIELD PLOTS (A/F PAGES)	
●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
—	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	FISHBONE
FC	FRESCO
FC-D	FRESCO-D
FG	FACOT
FH	FISHPOUT
FL	FLASHLIGHT
FM	FARKER
FT	FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊖	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
WC	WICK CAKE
SC	STONE CAKE
SK	SPRAGE CAKE
SN	SIDE NET
SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS	
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
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<input type="checkbox"/>	RADAR COVERAGE BY A SINGLE RADAR
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)	
⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊙	CONFIRMED GENERAL SAM SITE
⊖	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	SEAM TRACK
SV	NONVISON
W	WHIFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

SECRET



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AREA 8
A/F PAGE 4.40

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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 T UNKNOWN
 BK "BKN" (CHINESE)
 BL BAR LOCK
 BM BIG MESH
 C SCR - 270 DA
 D DUMBO
 FF FLAT FACE
 FR FORK REST
 H TACHI IS
 HI HIGH SILVER
 J JAP MK I
 K KNIFE REST
 F JAP MK I MOD 3 / JAP TYPE III
 B HI-DUMBO
 SH SLANT MESH
 SO SO/REE HOUSE
 SR SPOON REST
 T TUGHER
 TK TALL KING
 X CROSS SLOT
 XF CROSS FORK

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE
 VB FISHERED
 VC FRESKO
 FC-D FRESKO-D
 FG FAGOT
 FH FISHEROT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

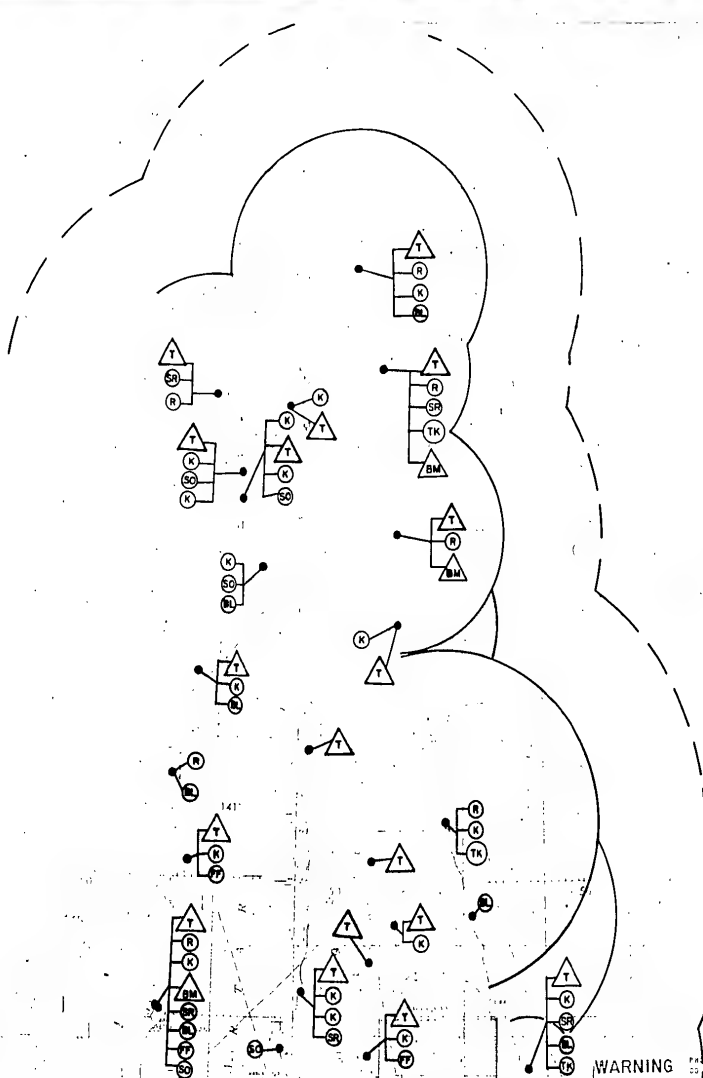
△ EW/GCI RADAR
 ⊖ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 RC ROCK CAKE
 SC STORE CAKE
 SK SPONGE CAKE
 SN SIDE NET
 SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
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 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE, GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊙ CONFIRMED GENERAL SAM SITE
 ⊕ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 ST SEAM TRACK
 SV SURVEILLANCE
 W WHIFF

AAA SITES:
 ◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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EW
PAGE 4.41
SECRET

WARNING

EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 T UNKNOWN
 BE "BEIJ" (CHINESE)
 ML BAR LOCK
 BM BIG MESH
 C SCR - 270 DA
 D DUMBO
 FF FLAT FACE
 FR FORK REST
 H TACHI IN
 HI HIGH SIEVE
 J JAP NO 1
 K KNIFE REST
 P JAP NO 1 MED 3 / JAP TYPE III
 R HI-DUMBO
 SM SLANT MESH
 SO SO/SEE HOUSE
 SR SPOON REST
 T TONKIN
 TX TALL KING
 X CROSS SLOT
 XY CROSS FORK

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

□ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/P PAGES)

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 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

Fb FISHBED
 FC FISHCORN
 FC-D FRESHCO-D
 FG FACOT
 FH FISHPOT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊖ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 WC WACK CAKE
 SC STONE CAKE
 SK SPOON CAKE
 SN SIDE NET

SLE EW LAGED FOR EARLY WARNING RADAR ABBREVIATIONS

--- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
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□ RADAR COVERAGE BY A SINGLE RADAR
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 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

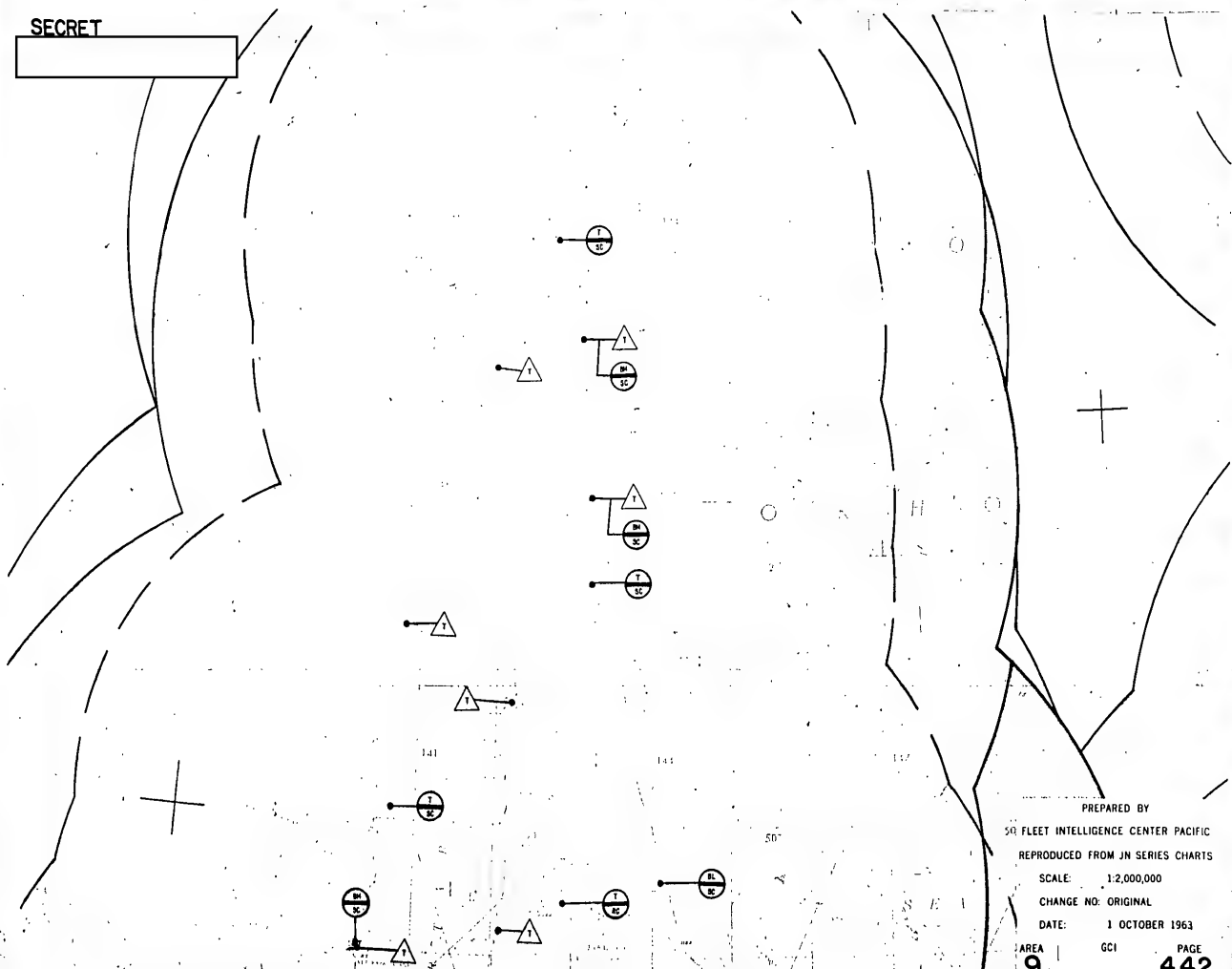
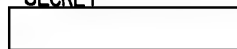
⊗ CONFIRMED SA-2 SITE
 ⊗ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ⊙ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SIGHTVISOR
 W WHIFF

AAA SITES

◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)

NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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AREA 9 GC1 PAGE 4.42

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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR

1 UNKNOWN --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

IK "BKM" (CHINESE)

IL BAR LOCK --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

IM BIG MESH

C SCR - 270 DA

D DUMBO ☐ RADAR COVERAGE BY A SINGLE RADAR

IF FLAT PACK ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS

IR FORK REST ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

E TACHI 16

HI HIGH SIEVE

J JAP MK I

K KNIFE REST

P JAP MK I MOD 3 / JAP TYPE III

R HI-DUMBO

SH SLANT MESH

SO SO/REE HOUSE

SR SPOON REST

T TUNER

TK TALL KING

X CROSS SLOT

YF CROSS FORK

AIRFIELD PLOTS (A/P PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS

— THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FB FISHER

FC FRESCO

FC-D FRESCO-D

FG FACOT

FN FISHPOT

FL FLASHLIGHT

FM FARMER

FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR

⊖ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS

RC ROCK CAKE

SC STONE CAKE

SE SPURGE CAKE

SN SIDE NUT

SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS

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☐ RADAR COVERAGE BY A SINGLE RADAR

☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS

☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊕ CONFIRMED SA-2 SITE

★ CONFIRMED SA-3 SITE

⊕ CONFIRMED GENERAL SAM SITE

○ GUN LAYING RADAR

□ SEARCH LIGHT CONTROL

F FIRE CAN

FW FIRE WHEEL

BT BEAM TRACK

SV SNIVVER

V WHIFF

AAA SITES

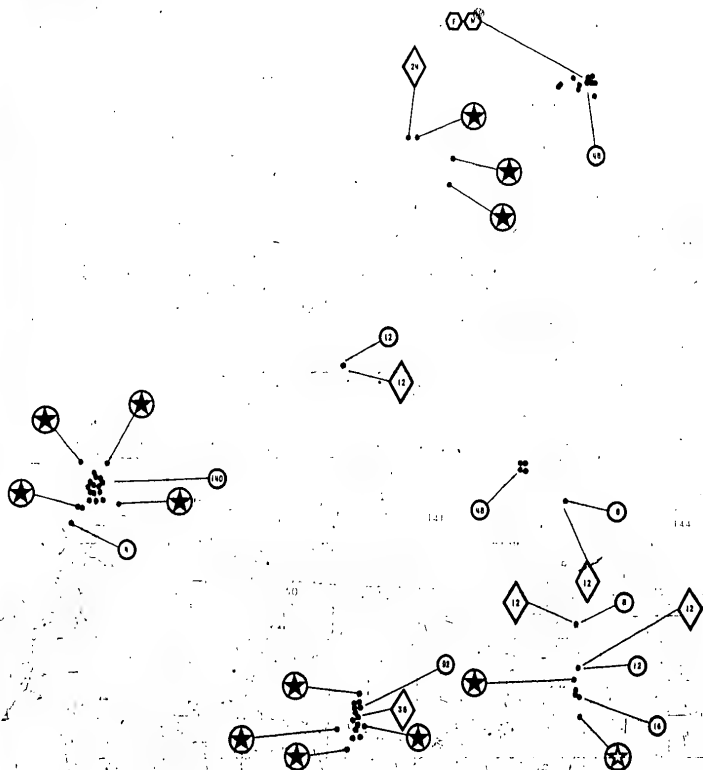
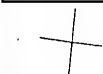
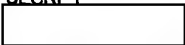
◇ LIGHT AAA GUNS (21-75mm)

○ MEDIUM AAA GUNS (76-100mm)

△ HEAVY AAA GUNS (101mm and above)

NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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147

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DATE 1 OCTOBER 1963

AREA 9 SAM/AA PAGE 443

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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 ? UNKNOWN
 BK "BKJ" (CHINESE)
 ML BAR LOCK
 BN BIG MESH
 C SCR - 270 DA
 D DODBO
 FF FLAT FACE
 FR FORK RUST
 H TACHI IS
 HI HIGH SLICE
 J JAP PK I
 K KNIVEREST
 P JAP PK I MOD 3 / JAP TYPE III
 R HI-DODBO
 SM SLANT MESH
 SO SO/REL HOUSE
 SR SPOON REST
 T TOKEN
 TK TALL KING
 X CROSS SLOT
 YV CROSS YOK

THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50° ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000° ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 □ RADAR COVERAGE BY A SINGLE RADAR
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AIRFIELD PLOTS (A/F PAGES)

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 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000° ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE
 FB FISHED
 FC FRESCO
 FC-D FRESCO-D
 FG FAGOT
 FR FISHROT
 FL FLAHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

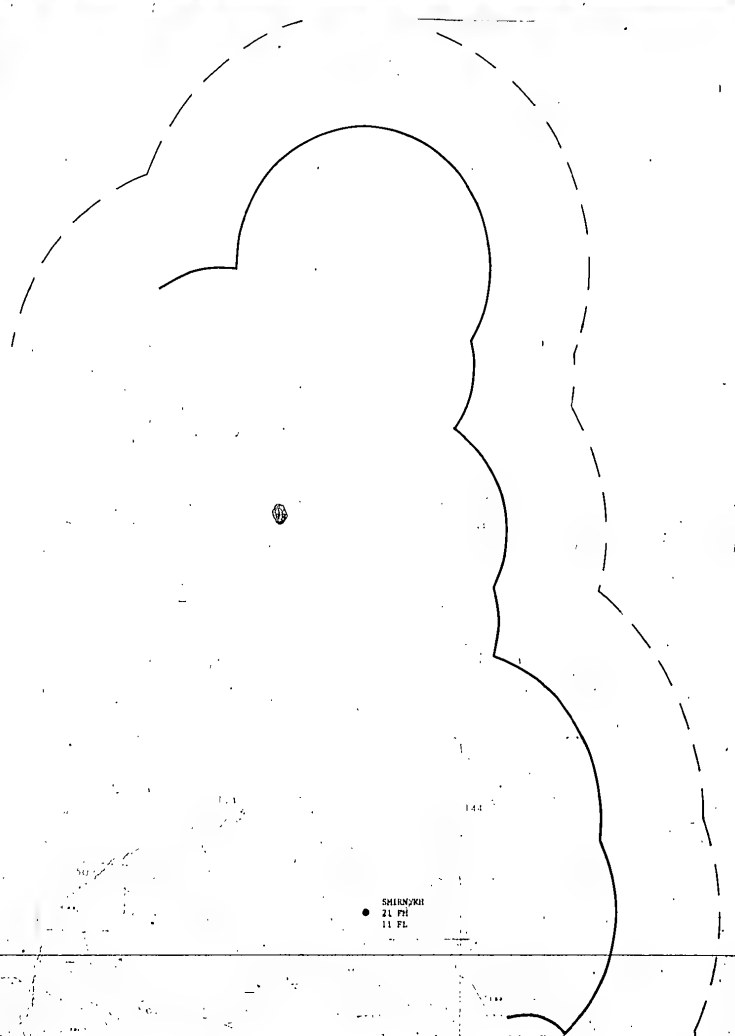
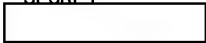
△ EW/GCI RADAR
 ○ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 RC ROCK CAKE
 SC STONE CAKE
 SK SPOON CAKE
 SN SIDE NUT
 SEE IN LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
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 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
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 FW FIRE WHEEL
 BT BEAM TRACK
 SV SURVEILLOR
 W WHIFF

AAA SITES
 ◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



KUNSHIN/SA
21 FC
13 FC-U

SHIN/RI
21 FC
13 FC

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CHANGE NO ORIGINAL
DATE 1 OCTOBER 1963
AREA 9
PAGE 4.44
SECRET

WARNING

EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 T UNKNOWN
 BK "BKJ" (CHINESE)
 BL BAR LOCK
 BM BIG MUSH
 C SCR - 230 BA
 D DUMBO
 FF FLAT FACE
 FR FORK REST
 H TACHI 16
 HI HIGH SUEVE
 J JAP PK 1
 K KENNERST
 P JAP PK 1 MOD 1 / JAP TYPE 111
 R NI-DUMBO
 SM SLANT MUSH
 SO SO/BEZ HOUSE
 SR SPOON REST
 T TUKEN
 TK TALL KING
 X CROSS SLOT
 YF CROSS FORK

THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

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AIRFIELD PLOTS (A/P PAGES)

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AIRCRAFT CODE

FB	FISHBED
FC	FRESH
FC-D	FRESH-D
FG	FACOT
FH	FISHHOT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW GCI RADAR
 ⊕ 12 RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 NG NOCK CAKE
 SC STONE CAKE
 SK STORK CAKE
 SN SINE BIT

SIC 12 HEAD FOR EARLY WARNING RADAR ABBREVIATIONS

--- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON

NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INTERCEPT RADARS AGAINST AIRCRAFT IN A DOWN-AND-UP ASPECT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.

☐ RADAR COVERAGE BY A SINGLE RADAR
 ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

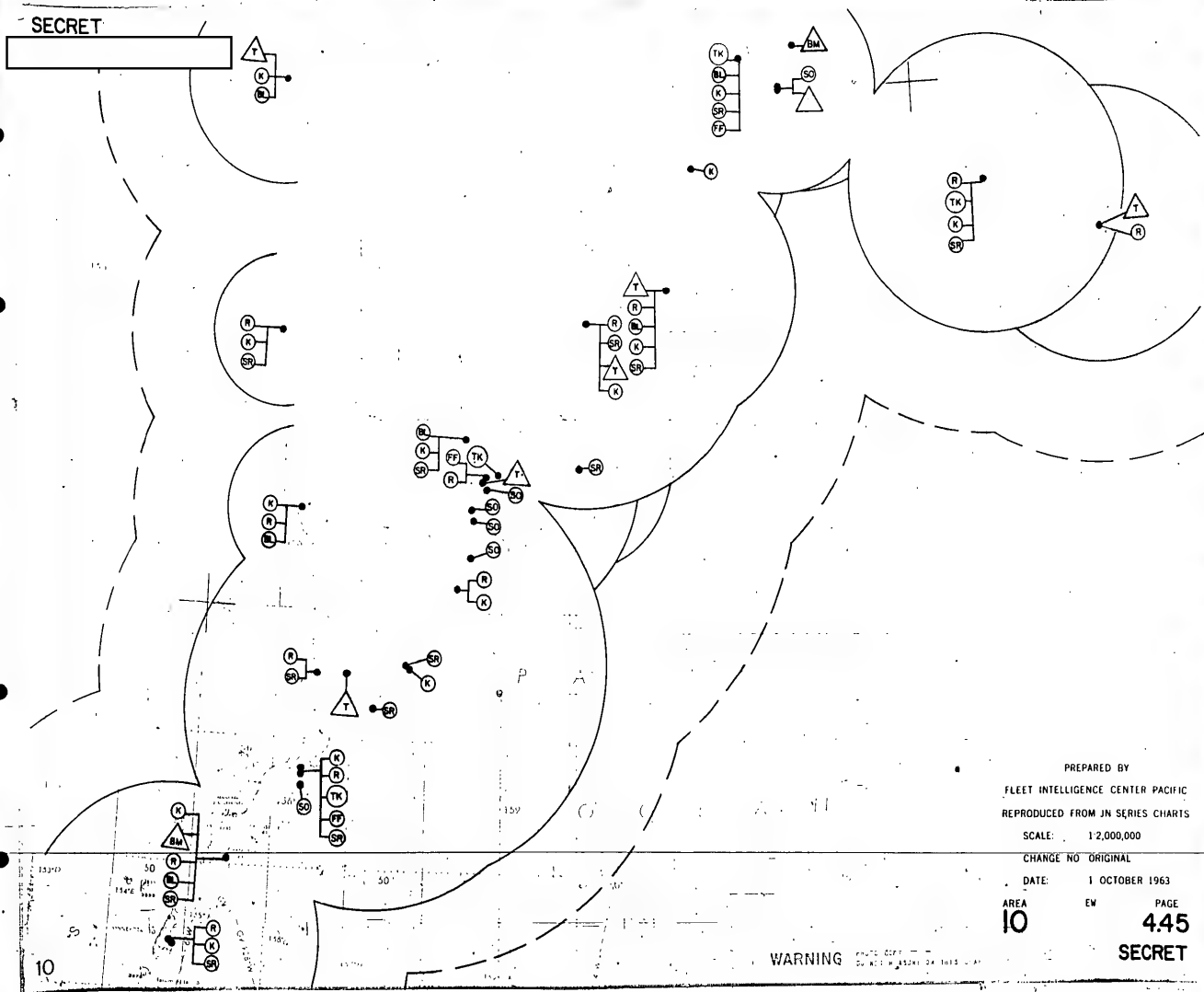
⊙ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊙ CONFIRMED GENERAL SAM SITE
 ⊙ GUN LAYING RADAR
 ⊕ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAN TRACK
 SV SENSIVOR
 W WILFF

AAA SITES

◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)

NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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REPRODUCED FROM JN SERIES CHARTS
SCALE: 1:2,000,000
CHANGE NO ORIGINAL
DATE: 1 OCTOBER 1963
AREA 10
EW PAGE 445
SECRET

WARNING

EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 T UNKNOWN
 BK "BIRD" (CHINESE)
 BL BAR LOCK
 BM BIG MUSH
 C SCR - 270 EA
 D DUMBO
 FF FLAT FACE
 FR YORK RUST
 H TACHI IN
 HI HIGH STEVE
 J JAP PW 1
 K KNIFEPOST
 P JAP PW 1 MOW 1 / JAP TYPE III
 R HI-DUMBO
 SM SLANT MESH
 SO SO/SEC HOUSE
 SR SPOON REST
 T TUKEN
 TK TALL KING
 X CROSS SLOT
 XY CROSS FORK

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SLOWWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SLOWWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE
 FB FISHERED
 FC FRESCO
 FC-D FRESCO-D
 FG FAGOT
 FH FISHPOT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

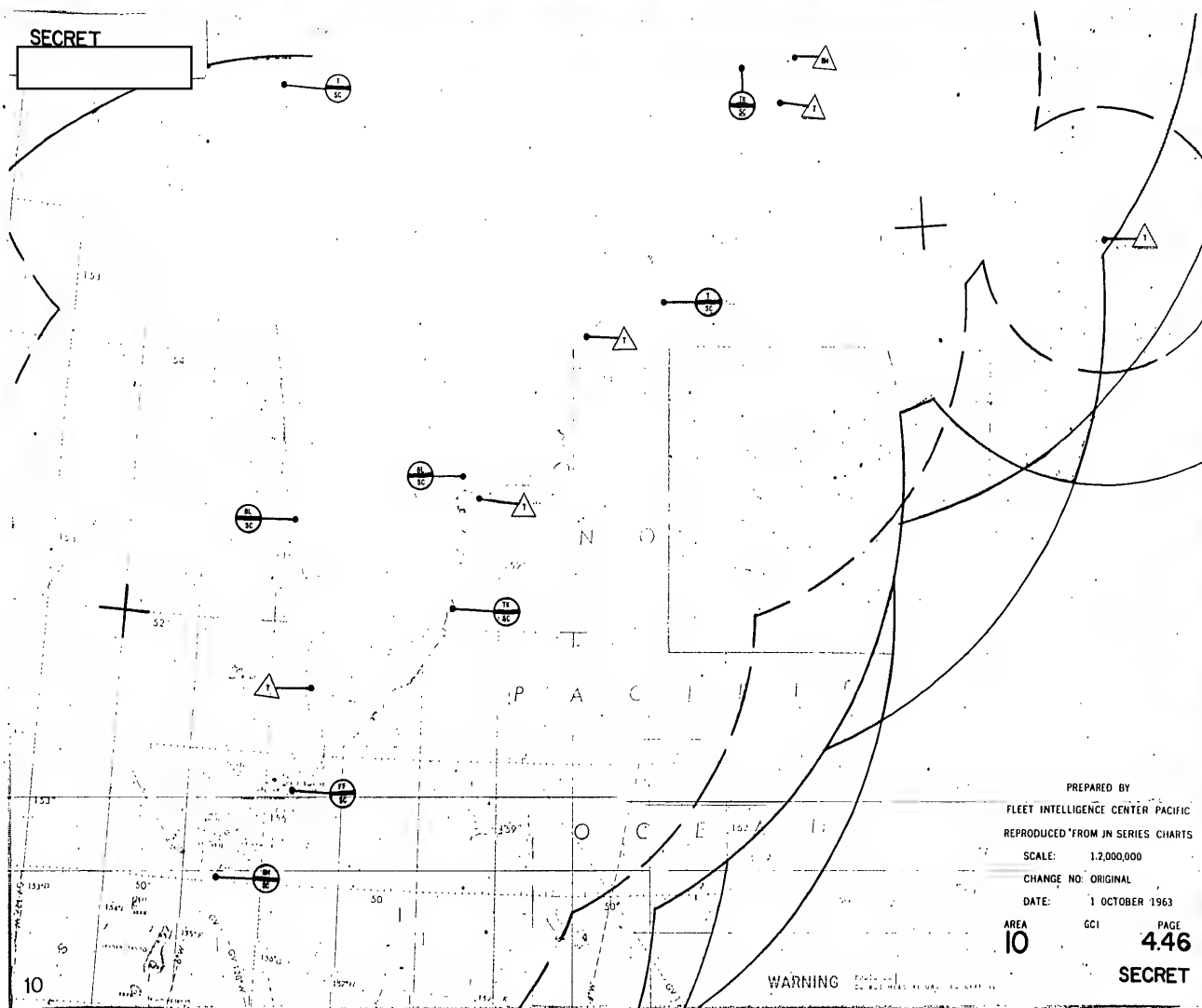
GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW GCI RADAR
 ⊕ EW RADAR CO-LOCATED WITH HEIGHT FINDER (H) RADAR TO FORM GCI UNITS
 W WACK GALT
 SC SPOON LAKE
 SK SPOON LAKE
 SN SIDE HIT
 SUT SUT PLACED FOR EARLY WARNING RADAR ABBREVIATIONS
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
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 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SLOWWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SLOWWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊕ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SUNVISOR
 W WHIFF
 AAA SITES
 ◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING - GROUND CONTROLLED INTERCEPT (GCI) RADAR
 T UNKNOWN
 BK "BLACK" (UNKNOWN)
 ML BAR LOCK
 BM BIG ROOM
 C SCR - 270 RA
 D DOME
 FF FLAT FAN
 FR FORD RST
 H HALL 16
 HI HIGH VIL
 J JAP PD 1
 K KIDNAPST
 F JAP VS 1 AND 3 / JAP TYPE III
 R HI-DUMBO
 SH SLANT PATH
 SO SO/SEE HOUSE
 SR SPON RST
 T TOWER
 TY TALL VIL
 X CROSS SLOT
 XT CROSS FORK

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

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☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERDICTIONS
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FB FISHED
 FC FRESCO
 FC-D FRESCO-D
 VC FAGOT
 FH FISHNET
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ GCI RADAR
 ⊕ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 BL BLACK LAKE
 SC STORM CAKE
 SK SPURGE LAKE
 SN SDR BLT
 SEE 14 INDEXED FOR EARLY WARNING RADAR ABBREVIATIONS

--- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
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☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

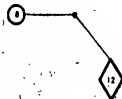
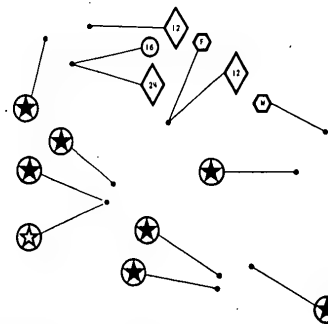
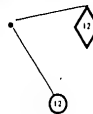
SURFACE TO AIR MISSILE (SAM) SITE, GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊕ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SONVISOR
 W WIZZY

AAA SITES

◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / Ground Controlled Intercept (GCI) RADAR
 ? UNKNOWN
 BE "BEER" (CHINESE)
 BL BAR LOCK
 BH BIG BUSH
 C SCW - 270 BA
 D DUMBO
 FY FLAT FACE
 FR FORK RUST
 H TACHI IN
 HI HIGH SIEVE
 J JAP MK I
 K KNIFEHIST
 P JAP MK I MOD 3 / JAP TYPE III
 R HI-DUMBO
 SH SLANT WASH
 SO SO/BEE HOUSE
 SR SPOON RUST
 T TOKEN
 TK TALL KING
 X CROSS SLOT
 YV CROSS YORE

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 [] RADAR COVERAGE BY A SINGLE RADAR
 [] RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 [] RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
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 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FB FISHBED
 FC FRESCO
 FC-D FRESCO-D
 FG FAGOT
 FH FISHPOW
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊖ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 RC ROCK CAKE
 SC STONE CAKE
 SK SPRING CAKE
 SN SIEB NET
 SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
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[] RADAR COVERAGE BY A SINGLE RADAR
 [] RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
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SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BREAK TRAIL
 SV SURVIVOR
 W WHEEP

AAA SITES

◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET

PEERAPALLOUS N. LIZOV
10 FC
11 IN-A
14 FH
15 FL

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REPRODUCED FROM JN SERIES CHARTS
SCALE 1:2,000,000
CHANGE NO ORIGINAL
DATE 1 OCTOBER 1963

AREA 10
PAGE 448
SECRET

EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 ? UNKNOWN
 BK "BKQ" (CHINESE)
 BL BAR LOCK
 BM BIG MESH
 C SCR - 270 DA
 D DUMBO
 FF FLAT FACE
 FR FORK REST
 H TACHI 18
 HI HIGH SIEVE
 J JAP PW 1
 K KNIFE/REST
 P JAP PW 1 MED 3 / JAP TYPE III
 R HI-DUMBO
 SK SLANT MESH
 SO SO/SEE HOUSE
 SL SPOON REST
 T TOKEN
 TK TALL KING
 X CROSS SLOT
 YV CROSS YORE

THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
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 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
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AIRFIELD PLOTS (A/P PAGES)

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 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE
 VA FISHBED
 VG FRESCO
 VC-D FRESCO-D
 FG FACOT
 FH FISHPOT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊖ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 RC ROCK CAKE
 SC STONE CAKE
 SK SPONGE CAKE
 SN SIDE NET
 SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
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SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊕ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FM FIRE WHEEL
 ST SEAM TRACK
 SV SUNK/VISOR
 W WHIFF

AAA SITES
 ◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
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 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

EARLY WARNING RADAR PLOTS (EW PAGES)

○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
T	UNKNOWN	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BK	"BKIQ" (CHINESE)	
BL	BAR LOCK	
BM	BIG MESH	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
C	SCR - 270 DA	
D	DUMBO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FR	FORK REST	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
H	TACHI 18	
HI	HIGH SIEVE	
J	JAP PW 1	
K	KNIFFELST	
P	JAP 'K 1 MOD 3 / JAP TYPE III	
R	H.-DUMBO	
SM	SLANT MESH	
SO	SO/SEE HOUSE	
SR	SPOON REST	
T	TOKEN	
TK	TALL KING	
X	CROSS SLOT	
XY	CROSS FORK	

AIRFIELD PLOTS (A/F PAGES)

●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	FISHER
FC	FRESNO
FC-D	FRESNO-D
FG	FACOT
FH	FISHROT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

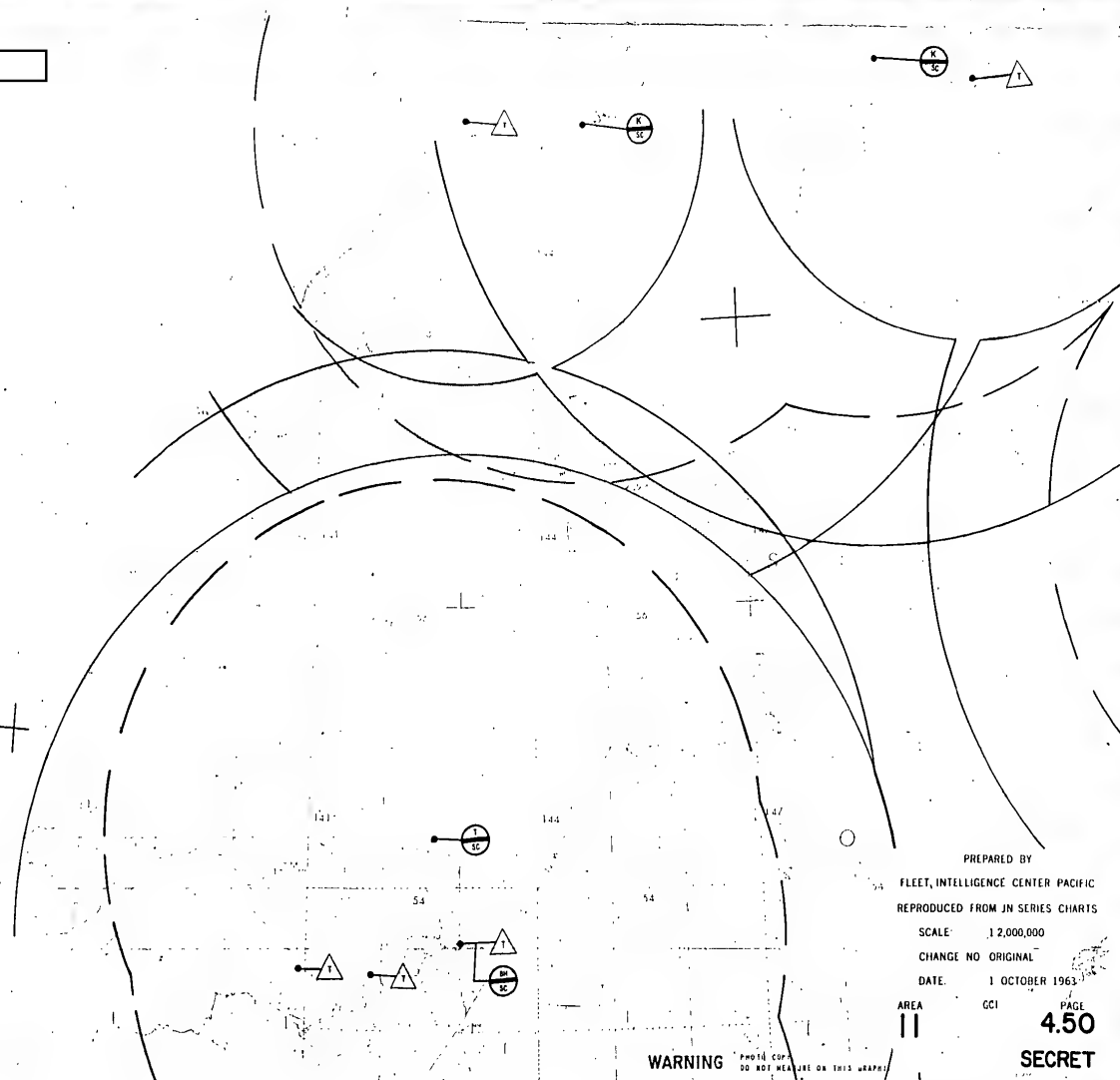
△	EW/GCI RADAR
⊙	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
NC	NOCK CAKE
SC	STONE CAKE
SR	SPOON CAKE
SN	SIDE NET
	SEE EW PAGES FOR EARLY WARNING RADAR ABBREVIATIONS
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
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<input type="checkbox"/>	RADAR COVERAGE BY A SINGLE RADAR
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE, GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
□	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SUNVISOR
W	WHIFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
	NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET

11



PREPARED BY
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REPRODUCED FROM JN SERIES CHARTS
SCALE: 1:2,000,000
CHANGE NO ORIGINAL
DATE: 1 OCTOBER 1963
GCI

AREA
11

PAGE
4.50

SECRET

WARNING PHOTO COPY
DO NOT MEASURE ON THIS WRAP

EARLY WARNING RADAR PLOTS (EW PAGES)

- EARLY WARNING (EW) RADAR
- △ EARLY WARNING / CAPABLE (CONTROLLED INTERCEPT) (CCI) RADAR
- UNKNOWN
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 30' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
- BK "BKKY" (CHINESE)
- BL BAR LOCK
- BM BIG MESH
- C SCR - 270 DA
- D DUNGO
- FF FLAT FACE
- FR FORK REST
- H TACHI 18
- HI HIGH SIEVE
- J JAP PW 1
- K KNIFE/REST
- P JAP PW 1 MOD 3 / JAP TYPE III
- R RU-DUNGO
- SH SLANT MESH
- SO SO/SEE HOUSE
- SR SPOON REST
- T TONEN
- TK TALL KING
- X CROSS SLOT
- XP CROSS FORK
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
- RADAR COVERAGE BY A SINGLE RADAR
- RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
- RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

- LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 30' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
- AIRCRAFT CODE
- FB FISHBED
- FC FRESKO
- FC-D FRESKO-D
- FG FAGOT
- FH FISHHOT
- FL FLASHLIGHT
- FM FARMER
- FT FITTER

GROUND (CONTROLLED INTERCEPT) RADAR PLOTS (CCI PAGES)

- △ EW/CCI RADAR
- ⊕ EW RADAR CO-LOCATED WITH BLIGHT FINDER (BF) RADAR TO FORM CCI UNITS
- RC ROCK CART
- SC STONE CAKE
- SK SPOON CAKE
- SN SINK HLT
- SEE EW PAGES FOR EARLY WARNING RADAR ABBREVIATIONS
- ESTIMATED MAXIMUM EFFECTIVE CCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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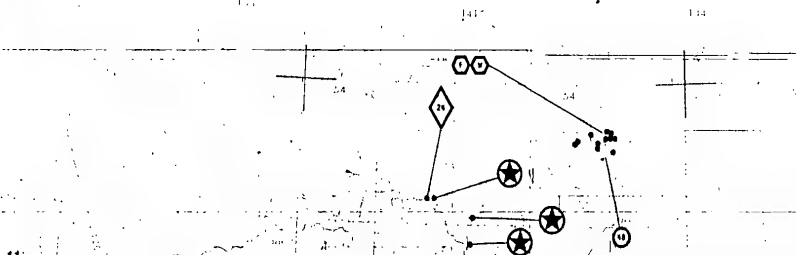
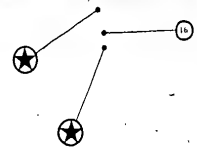
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- ★ CONFIRMED SA-3 SITE
- ⊕ CONFIRMED GENERAL SAM SITE
- GUN LAYING RADAR
- SEARCH LIGHT CONTROL
- F FIRE CAN
- FW FIRE WHEEL
- BT BEAM TRACK
- SV SURVIVOR
- W WHIFF

AAA SITES

- ◇ LIGHT AAA GUNS (21-75mm)
- MEDIUM AAA GUNS (76-100mm)
- △ HEAVY AAA GUNS (101mm and above)
- NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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AREA II SAM/AAA PAGE 4.51

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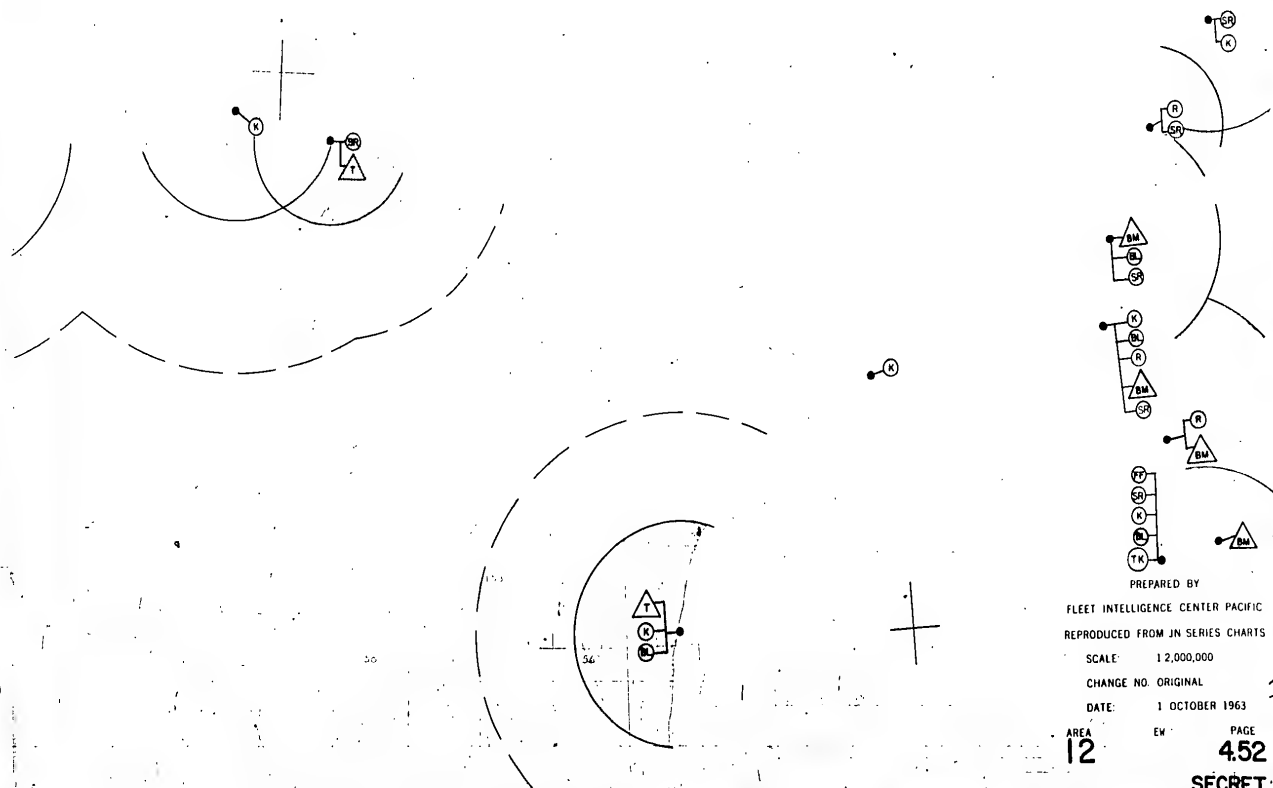
EARLY WARNING RADAR PLOTS (EW PAGES)	
○	EARLY WARNING (EW) RADAR
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
1	UNKNOWN
SK	"SKIN" (CHINESE)
ML	BAR LOCK
SM	BIG MESH
C	SCR - 270 BA
D	DUGBO
FF	FLAT FACE
FR	FORK REST
H	TACHI IN
HI	HIGH SIEVE
J	JAP NO 1
K	KNIFPRST
P	JAP 'X' I MOD 1 / JAP TYPE III
R	H-BURBO
SM	SLANT MESH
SO	SO/EE HOUSE
SK	SPOON REST
T	TOKEN
TK	TALL KING
X	CROSS SLOT
XV	CROSS FORK

AIRFIELD PLOTS (A/F PAGES)	
●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	VISHUED
FC	WRESCO
FC-D	FRESCO-D
FC	WAGOT
FB	VISHPUT
FL	FLASHLIGHT
FM	FARMER
FT	FLITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/CI RADAR
△	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
W	WACK LANT
SC	STONE CASE
SK	SPOON CASE
SN	SING HIT
---	SEE EW PAGES FOR EARLY WARNING RADAR ABBREVIATIONS
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INDIVIDUAL RADARS AGAINST AIRCRAFT IN A SIDE-ON ASPECT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.	
□	RADAR COVERAGE BY A SINGLE RADAR
□	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
□	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE CAN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)	
⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
⊗	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SUNVISOR
W	WHIFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS - DENOTES TOTAL GUNS AT SITE	

--



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AREA 12 EW PAGE 4.52

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WARNING

EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 T UNKNOWN --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 BK "BND" (CHINESE)
 BL BAR LOCK --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 500' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 BM BIG HOUSE
 C SCR - 270 DA
 D DUMBO ☐ RADAR COVERAGE BY A SINGLE RADAR
 FF FLAT FAYL ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 FR FORK REST ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
 H TACH 1b
 HI HIGH DIEVL
 J JAP NK 1
 K KNIFEPOST
 P JAP NK 1 NOJ 1 / JAP TYP. III
 R HI-DUMBO
 SM SLANT MESH
 SO SO/EE HOUSE
 SE SPOON REST
 T TOWER
 TK TALL KING
 X CROSS SLOT
 YV CROSS FORK

AIRFIELD PLOTS (A/P PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
 — THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 500' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 AIRCRAFT CODE
 FB VISIBLED
 FC FRESCO
 FC-D FRESCO-D
 FG FAGON
 FH FISHPUT
 FL FISHLIGHT
 FM FARMER
 FT FLYER

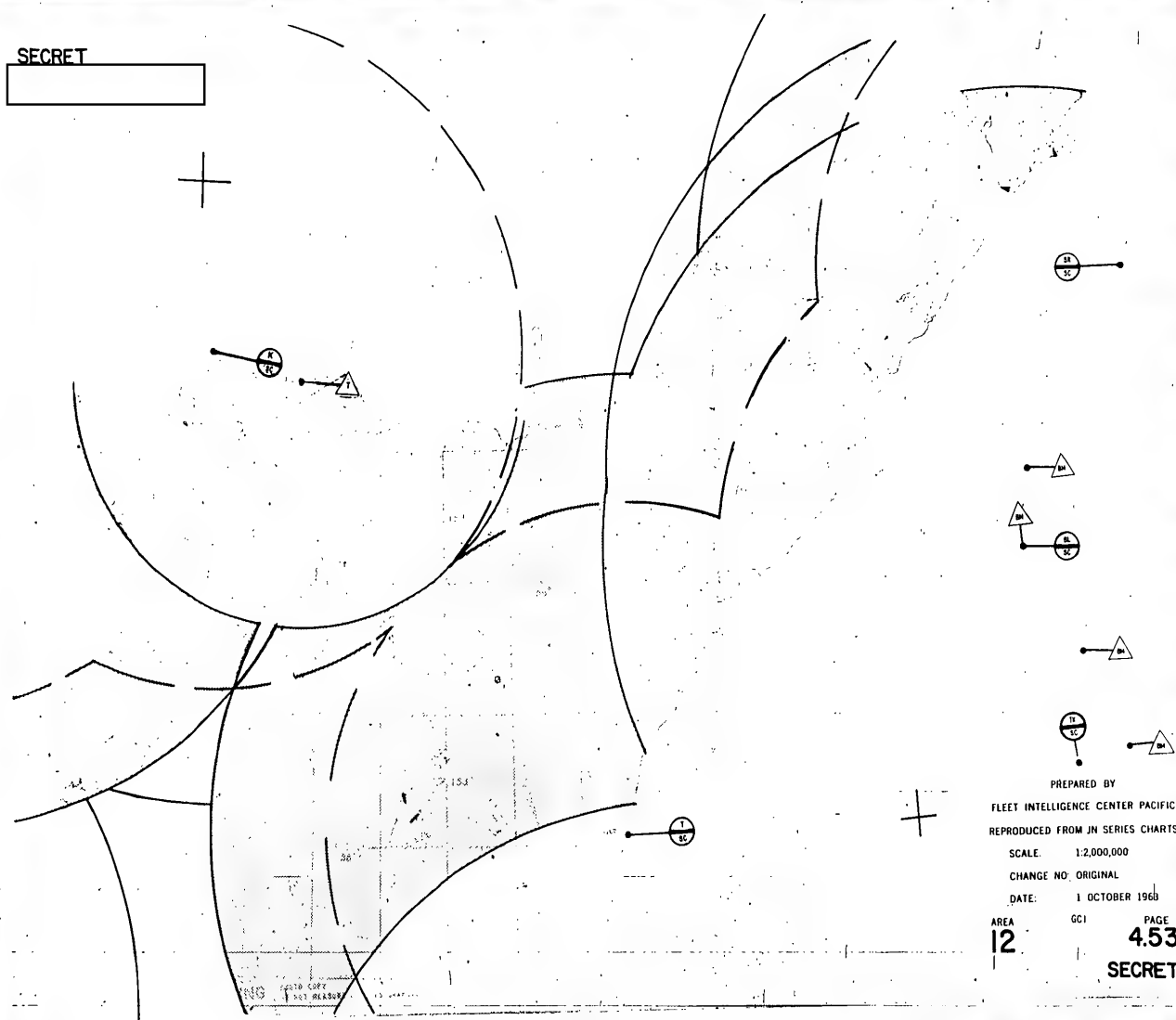
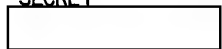
GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ GCI RADAR
 ⊕ 1-2 RADAR CO-LOCATED WITH HEIGHT FINDER (H) RADAR TO FORM GCI UNITS
 BK BACK LANT
 SC SING CASE
 SE SING CASE
 SN SING NET
 SEE 1-4 INDEXED FOR EARLY WARNING RADAR ABBREVIATIONS
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
 NOTE: THE GCI RANGES ARE ESTIMATED BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INDIVIDUAL RADARS AGAINST AIRCRAFT IN A BURN-AND-ABORT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.
☐ RADAR COVERAGE BY A SINGLE RADAR
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊕ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊕ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 ST BEAM TRACK
 SV SURVIVOR
 W WHIFF
 AAA SITES
 ◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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PAGE 4.53
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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 T UNKNOWN
 BK "BKK" (CHINESE)
 BL BAR LOCK
 BM BIG BUSH
 C SCR - 230 DA
 D DUNDO
 FF FLAT FACE
 FR FORK RUST
 H TACHI 18
 HI HIGH SIEVE
 J JAP PK 1
 K KNIFEPOST
 P JAP PK 1 MOD 1 / JAP TYPE 111
 R NI-DUNDO
 SN SLANT NESH
 SO SO/BEE HOUSE
 SR SPOON REST
 T TOKEN
 TK TALL KING
 X CROSS SLOT
 XV CROSS FORK

THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

☐ RADAR COVERAGE BY A SINGLE RADAR
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

-PB FISHBED
 FC FRESKO
 FC-D FRESKO-D
 FG FAGOT
 FH FISHPOT
 FL FLASHLIGHT
 FM FANHER
 FT FITTER

GROUND (CONTROLLED INTERCEPT) RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊖ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 MC ROCK CASE
 SC STARK CASE
 SK STARK CASE
 SN SINC NET
 SEE 1M LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON

NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INDIVIDUAL RADARS AGAINST AIRCRAFT IN A NORM-ON ASPECT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.

☐ RADAR COVERAGE BY A SINGLE RADAR
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

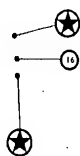
SURFACE TO AIR MISSILE (SAM) SITE/CUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 □ CUN LAYING RADAR
 □ SEARCH LIGHT CONTRAIL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SURVEILLANCE
 W WHIFF

AAA SITES

◇ LIGHT AAA GUNS (21-75mm)
 ◇ MEDIUM AAA GUNS (76-100mm)
 ◇ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

52
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AREA 12 SAM/AAA PAGE 4.54

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12
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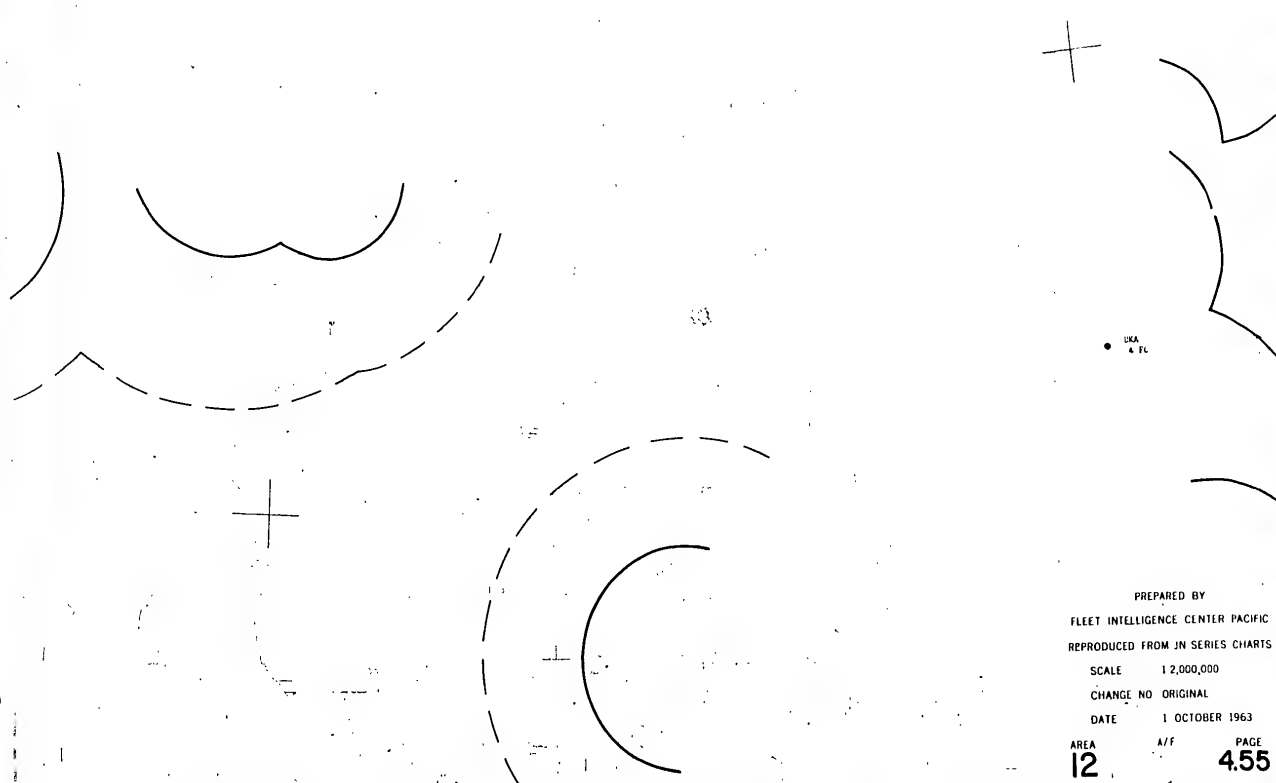
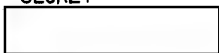
EARLY WARNING RADAR PLOTS (EW PAGES)		
○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
I	IMBROSON	--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BE	"BEIKU" (CHINESE)	
BL	BAR LOCK	--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 1000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BH	BIG HORN	
C	SCR - 270 DA	
D	DURBO	<input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FR	FORK REST	<input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
H	YACHI 16	
HI	HIGH SIEVE	
J	JAP ME 1	
K	KNIVEREST	
P	JAP ME 1 FWD 1 / JAP TYPE 111	
R	HI-DURBO	
SM	SLANT MESH	
SO	SO/RED HOUSE	
SR	SPOON REST	
T	TOKEN	
TK	TALL KING	
X	CROSS SLOT	
XF	CROSS FORK	

AIRFIELD PLOTS (A/F PAGES)		
●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS	
—	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES	
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 1000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES	
AIRCRAFT CODE		
FB	FISHBED	
FC	FRESCO	
FC-D	FRESCO-D	
FG	FACOT	
PH	FISHPOT	
FL	FLASHLIGHT	
FM	FARMER	
FT	FITTER	

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊕	1-2 RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
W	WICK CAKE
SC	SURE CASE
SA	SINGLE CASE
SN	SIDE HIT
SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS	
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INTERCEPT RADARS AGAINST AIRCRAFT IN A FORWARD ASPECT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.	
<input type="checkbox"/>	RADAR COVERAGE BY A SINGLE RADAR
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SUBSURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)	
⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
○	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SUNVISOR
W	WIFFY
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

SECRET



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AREA 12
A/F
PAGE 4.55
SECRET

EARLY WARNING RADAR PLOTS (EW PAGES)	
○	EARLY WARNING (EW) RADAR
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
T	UNKNOWN
BE	"BEIN" (CHINESE) --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BL	BAR LOCK --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BM	BIG MUSH
C	SCR - 270 DA
D	DUMBO <input type="checkbox"/> RADAR COVERAGE BY A SINGLE RADAR
FF	FLAT FACE <input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
FR	FORK RUST <input type="checkbox"/> RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
H	TACHI IN
HI	HIGH SLOVE
J	JAP MK I
K	KNIVERST
P	JAP MK I MOD 1 / JAP TYPE III
R	HI-DUMBO
SM	SLANT PESH
SO	SO/REE HOUSE
SR	SPOON RUST
T	TOKEN
TK	TALL KING
X	CROSS DLOT
YF	CROSS YORK

AIRFIELD PLOTS (A/F PAGES)	
●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	FISHED
FC	FAESCO
FC-D	FEECHS-E
FG	FAGOT
FR	FISHPOT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

GROUND (UNPUBLISHED) INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊖	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
RC	ROCK LAKE
SC	STORM CAVE
SK	STORM CAVE
SN	SIDE RUT
SET	SET IN FIELD FOR EARLY WARNING RADAR ABBREVIATIONS
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
NOTE:	THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INDIVIDUAL RADARS AGAINST AIRCRAFT IN A DIRM-4000 ADAPT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ADAPT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.
<input type="checkbox"/>	RADAR COVERAGE BY A SINGLE RADAR
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
<input type="checkbox"/>	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)	
⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
⊗	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SUNVISOR
W	WHIFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

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AREA
13

E

PAGE
4.56

SECRET

WARNING

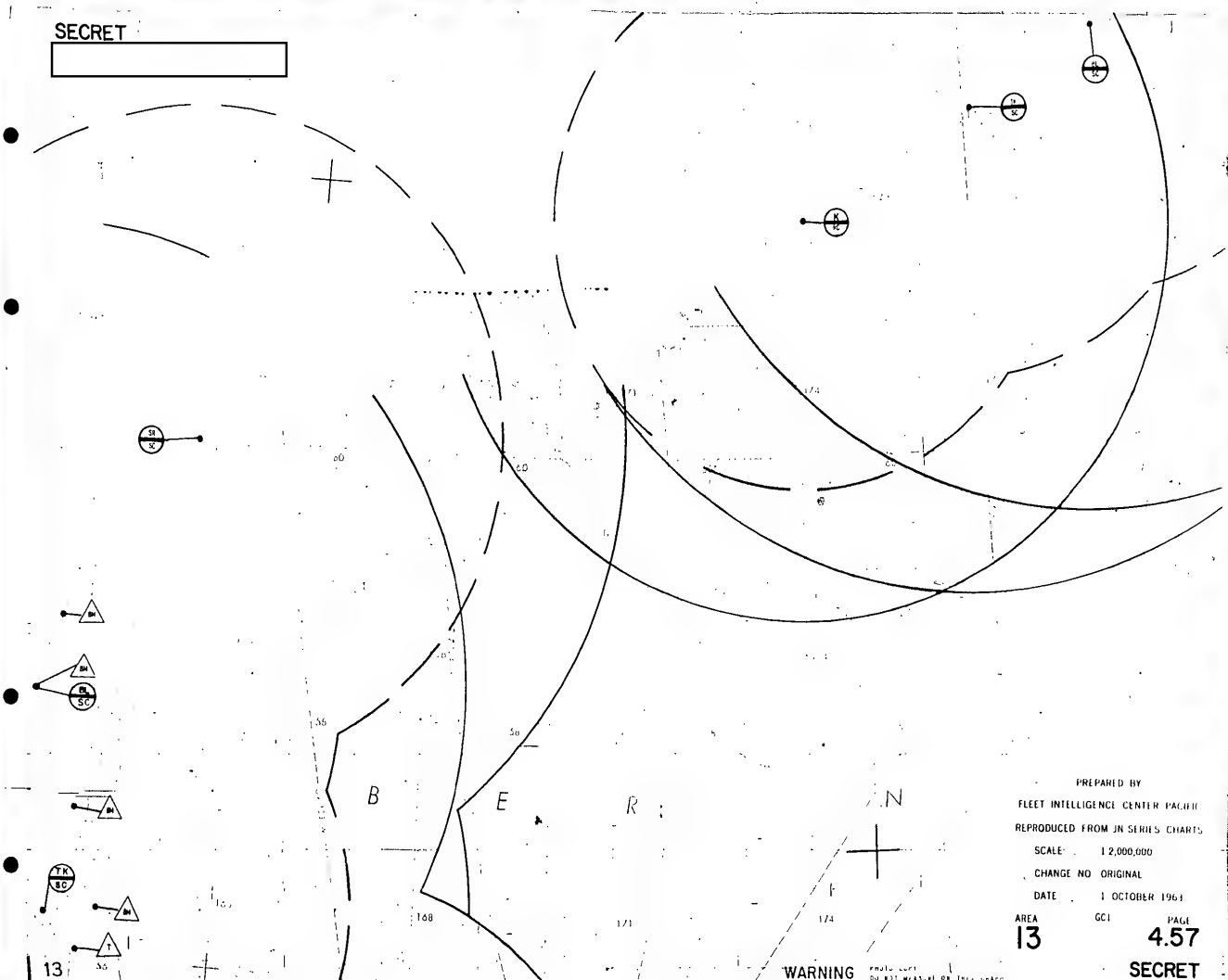
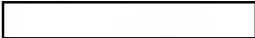
EARLY WARNING RADAR PLOTS (EW PAGES)		
○	EARLY WARNING (EW) RADAR	
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR	
T	UNKNOWN	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BK	"BKG" (CHINESE)	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BL	BAR LOCK	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
BH	BIG HUSH	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
C	SCR - 270 HA	
D	DUMBO	
FF	FLAT FACE	
FR	FORE RUST	
H	TACH 16	
HI	HIGH SILENCE	
J	JAP ME 1	
K	KNIVEREST	
P	JAP ME 1 MOD 3 / JAP TYPE III	
R	HI-DUMBO	
SH	SLANT PESH	
SO	SO/SEE HOUSE	
SR	SPOON RUST	
T	TOKEN	
TK	TALL KING	
X	CROSS SLOD	
XP	CROSS FORK	

AIRFIELD PLOTS (A/F PAGES)	
●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
—	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	FISHBED
FC	FRESCO
FC-D	FRESCO-D
FG	FAGOT
FI	FISHPOT
FL	FLASHLIGHT
FM	FARMER
FT	FILTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊕	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
BC	BACK CASE
SC	STONE CASE
SK	SINCE CASE
SN	SINE NET
SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS	
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
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□	RADAR COVERAGE BY A SINGLE RADAR
□	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
□	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)	
⊕	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊕	CONFIRMED GENERAL SAM SITE
○	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
V	FIRE CAN
FW	FIRE WHEEL
BT	BEACH TRACK
SV	SUNVISOR
W	WHIFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

SECRET



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AREA 13 GC1 PAGE 4.57

WARNING

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DO NOT MIX WITH OR THIS CHART

SECRET

EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 ? UNKNOWN
 BK "BAD" (CHUNKY) --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50° ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 BL BAR LOCK --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000° ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 BM BIG MISS
 C SCR - 220 MA
 D DUMBO
 PF FLAT FACE
 PR PORK REST
 H TACHI IN
 HI HIGH SIEVE
 J JAP PK 1
 K KNIFEREST
 P JAP PK 1 MOD 1 / JAP TYP 111
 R RI-DUMBO
 SM SLANT MISS
 SO SO/BEH MISS
 SR SPOON REST
 T TUKEN
 TK TALL KING
 X CROSS SLOT
 XY CROSS FORK

AIRFIELD PLOTS (A/F PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50° ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000° ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FB FISHED
 FC FRESKO
 FC-D FRESKO-D
 FG FAGOT
 FH FISHPO
 FL FLASHLIGHT
 FM FARMER
 FT FILTER

GROUND (UNCONTROLLED INTERCEPT) RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊖ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 RG ROCK CAKE
 SG STONE CAKE
 SK SKULL CAKE
 SN SNAKE
 SIF SIF (USED FOR EARLY WARNING RADAR ABNORMALITIES)
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
 NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INDIVIDUAL RADARS AGAINST AIRCRAFT IN A DOWN-UP ASPECT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

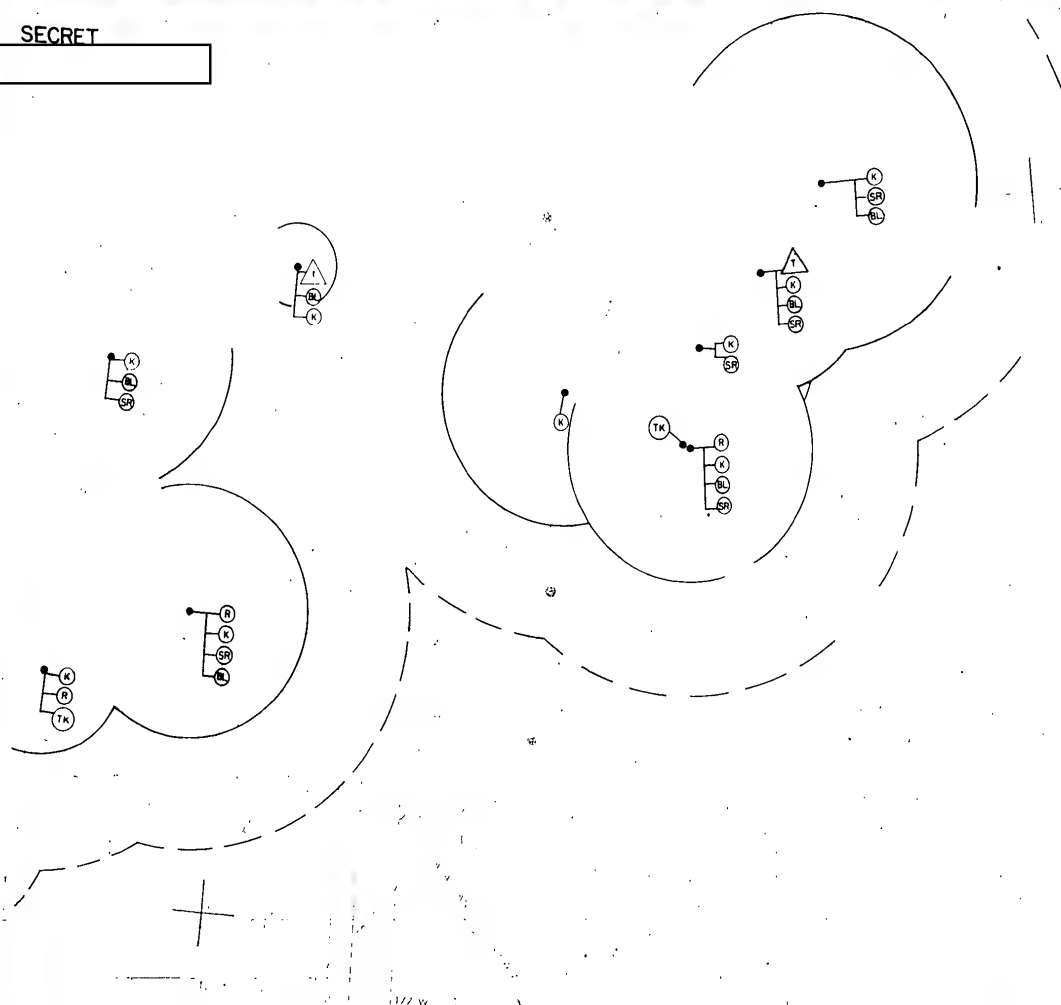
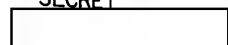
SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊕ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 P FIRE CAN
 PW FIRE WHEEL
 BT BEAM TRACK
 SV SUNVISOR
 W WHIFF

AAA SITES

◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

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AREA 14
EW PAGE 4.58
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WARNING

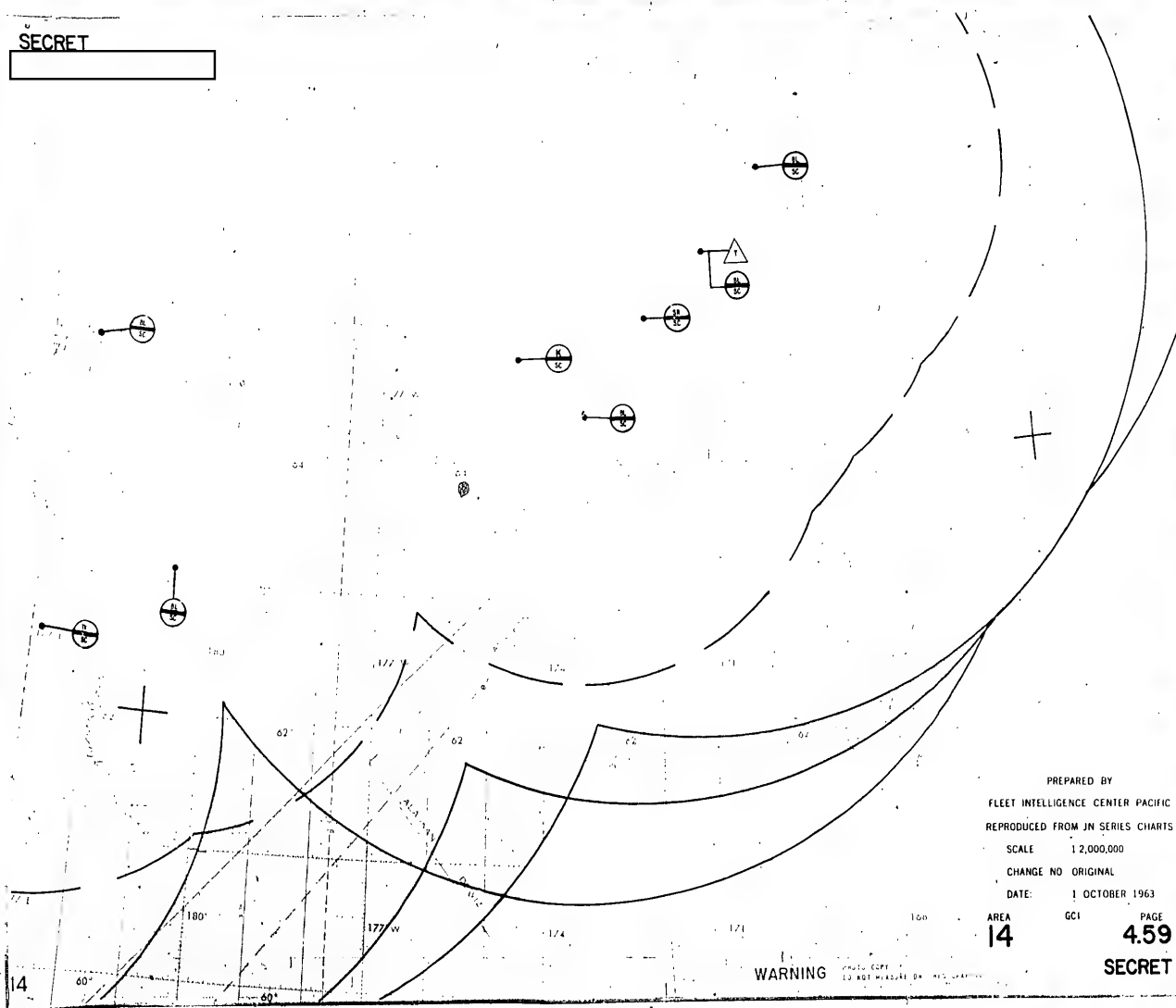
EARLY WARNING RADAR PLOTS (EW PAGES)	
○	EARLY WARNING (EW) RADAR
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
?	UNKNOWN
BK	"BKM" (CHINESE)
BL	BAD LOCK
BW	BIG MESH
C	SCR - 270 DA
D	DUMBO
FF	FLAT FACE
FR	FORK REST
HI	HIGH SIEVE
J	JAP MK I
K	KNIFE/ST
P	JAP MK I MOD 3 / JAP TYPE III
R	HI-DUMBO
SH	SLANT MESH
SO	SO/BEE HOUSE
SR	SPOON REST
T	TOKEN
TK	TALL KING
X	CROSS SLOT
XY	CROSS FORK

AIRFIELD PLOTS (A/F PAGES)	
●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	FISHER
FC	FRESKO
FD	FRESKO-B
FG	FAGOR
FR	FISHPOY
FL	FLASHLIGHT
FM	FARMER
FT	FLITER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊖	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
W	WICK CAKE
SC	STONE CAKE
SK	SINGLET CAKE
SN	SIDE NET
SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS	
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INDIVIDUAL RADARS AGAINST AIRCRAFT IN A SIDE-ON ASPECT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.	
□	RADAR COVERAGE BY A SINGLE RADAR
□	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
□	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)	
⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
⊙	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SURVIVOR
W	WHIFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

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WARNING

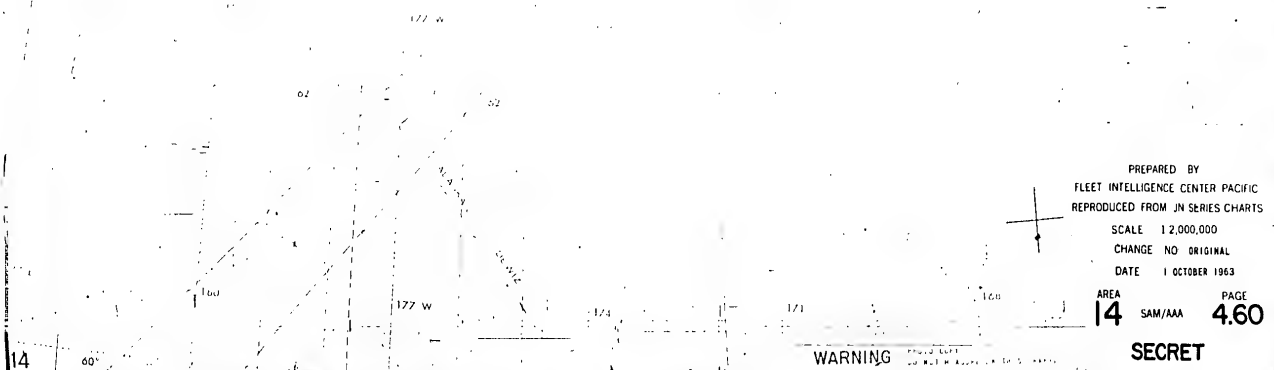
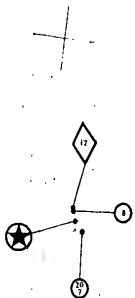
EARLY WARNING RADAR PLOTS (EW PAGES)	
○	EARLY WARNING (EW) RADAR
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
?	UNKNOWN
BK	"BEIM" (CHINESE)
BL	BAR LOCK
BN	BIG MESH
C	SCR - 270 DA
D	DODBO
FF	FLAT FACE
FR	FORK REST
H	TACHI 1b
HI	HIGH SIEVE
J	JAP 1b 1
K	KNIFE REST
P	JAP 1b 1 MOD 3 / JAP TYPE III
R	HI-DODBO
SN	SLANT MESH
SO	SO/REC HOUSE
SR	SPOON REST
T	TOKEN
TK	TALL KING
X	CROSS SLOT
XV	CROSS FORK

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊖	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
RC	ROCK CAKE
SC	STONE CAKE
SK	SPOON CAKE
SN	SIDE NET
SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS	
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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□	RADAR COVERAGE BY A SINGLE RADAR
□	RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
□	RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)	
●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FB	FISHBED
FC	FRESCO
FC-D	FRESCO-D
FG	FAGOT
PH	FISHPOT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)	
⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
○	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAM TRACK
SV	SUNVISOR
W	WHIFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE	

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14 SAM/AAA
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WARNING

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EARLY WARNING RADAR PLOTS (EW PAGES)

- EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 ? UNKNOWN
 BK "BREM" (CHINESE)
 BL BAR LOCK
 BM BIG MESH
 C SCR 7 230 BA
 D DUMBO
 FF FLAT FACE
 FR FORK REST
 H TACHI 18
 HI HIGH SIEVE
 J JAP PW 1
 K KNIFE REST
 P JAP PW 1 MOD 3 / JAP TYPE 111
 R HI-DUMBO
 SM SLANT MESH
 SO SO/SEEHOUSE
 SR SPOON REST
 T TOWER
 TK TALL KING
 X CROSS SLOT
 XY CROSS YORK
- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
- ☐ RADAR COVERAGE BY A SINGLE RADAR
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

- LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
- AIRCRAFT CODE
- FB FISHED
 VC FRESKO
 FC-D FRESKO-D
 FO FAGOT
 FH FISHPOT
 FL FLASHLIGHT
 FN FANDER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

- △ EW/GCI RADAR
 ○ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 RC ROCK CAKE
 SC STONE CAKE
 SK SPURGE CAKE
 SN SINE NET
- SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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- ☐ RADAR COVERAGE BY A SINGLE RADAR
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

- ⊕ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊕ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SURVIVOR
 W WHEIFF
- AAA SITES
- ◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
- NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

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AREA
14

A/F

PAGE
4.61

SECRET

WARNING

EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 Z UNKNOWN — THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 BK "BIRD" (CHINESE)
 BL BAR LOCK --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 BM BIG MUSH
 C CLR - 270 HA
 D DUMBO ☐ RADAR COVERAGE BY A SINGLE RADAR
 FF FLAT FACE ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 FR FURK RUST ☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS
 H TACHI IS
 HI HIGH SIEVE
 J JAP MK I
 K KNIFEPOST
 P JAP MK I MOD 3 / JAP TYPE III
 R HI-DUMBO
 SM SLANT MESH
 SO SO/RES HOUSE
 SR SPOON RUST
 T. TUKEN
 TK TALL KING
 X CROSS SLOT
 XV CROSS FORK

AIRFIELD PLOTS (A/F PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
 — THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FB FISHBED
 FC FRESKO
 FC-D FRESKO-D
 FG FADOM
 FH FISHPUT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND (INTERCEPT) RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊙ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 MC ROCK CAKE
 SC STONE CAKE
 SK SPOON CAKE
 SN SIDE BLT
 SEE L-4 LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
 — ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
 NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF END-FIELD RADARS AGAINST AIRCRAFT IN A DOWNWARD ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.
☐ RADAR COVERAGE BY A SINGLE RADAR
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
☐ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

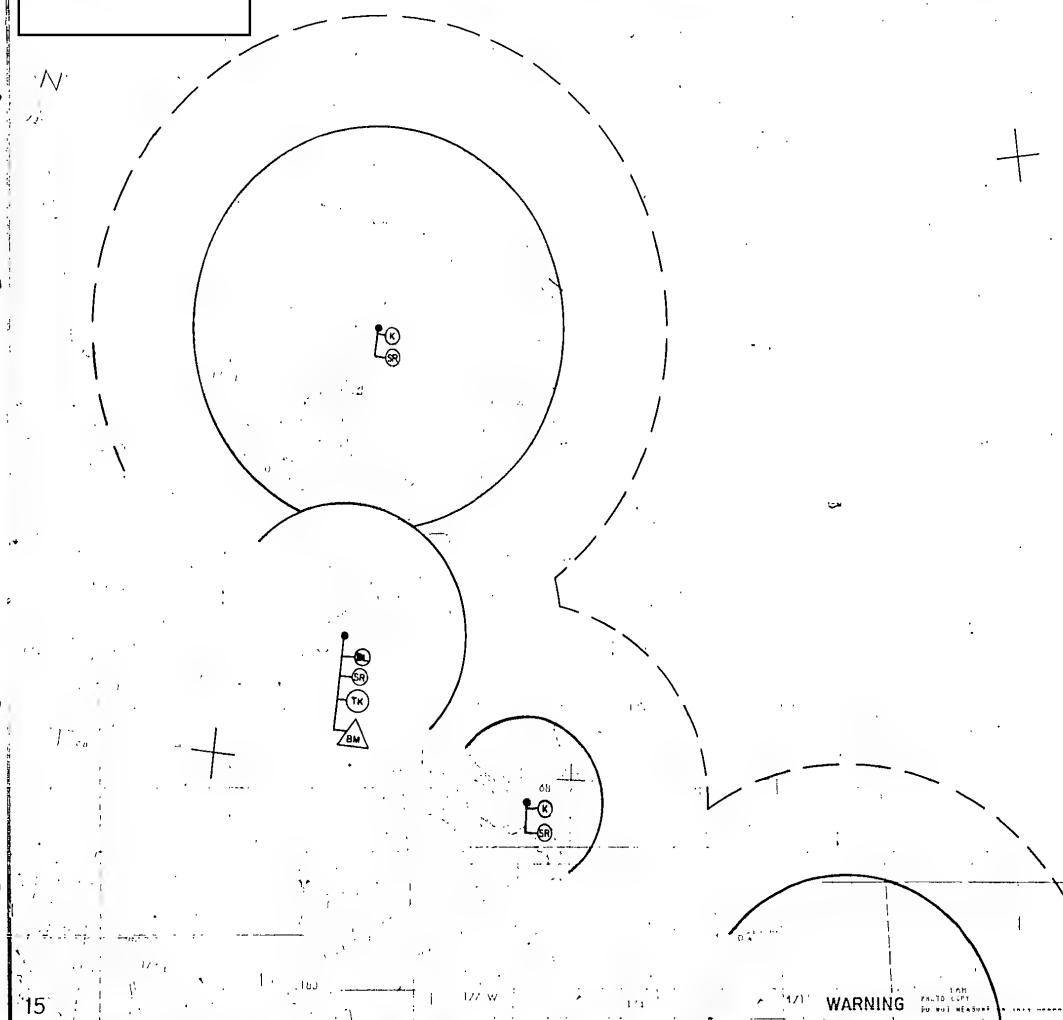
SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ⊙ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SURVIVOR
 W WHITE

AAA SITES

◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

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EW 462
PAGE 462
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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 ? UNKNOWN
 BK "BKIN" (CHINESE)
 BL BAR LOCK
 BM BIG MESH
 C SCR - 270 DA
 D DUMBO
 FF FLAT FACE
 FR YORK REST
 H TACHI 16
 HI HIGH SIEVE
 J JAP M 1
 K KNIFEPOST
 P JAP M 1 MOD 3 / JAP TYPE III
 R HI-DUMBO
 SM SLANT MESH
 SO SO/BEE HOUSE
 SR SPOON REST
 T TOKEN
 TK TALL KING
 X CROSS SLOT
 XF CROSS FORK

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE
 FB FISHBED
 FC FRESCO
 FC-D FRESCO-D
 FG FACOT
 FH FISHPOW
 FL FLASHLIGHT
 FM FARMER
 FT FIFTEEN

GROUND (UNTRACED) INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ○ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 NC NOVA CAKE
 SC STONE CAKE
 SK SPRING CAKE
 SN SINK HLT
 SEE LW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
 NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INTERCEPT RADARS AGAINST AIRCRAFT IN A DOWNSIDE ASPECT. THESE RANGES MAY VARY CONSIDERABLY WITH TARGET ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

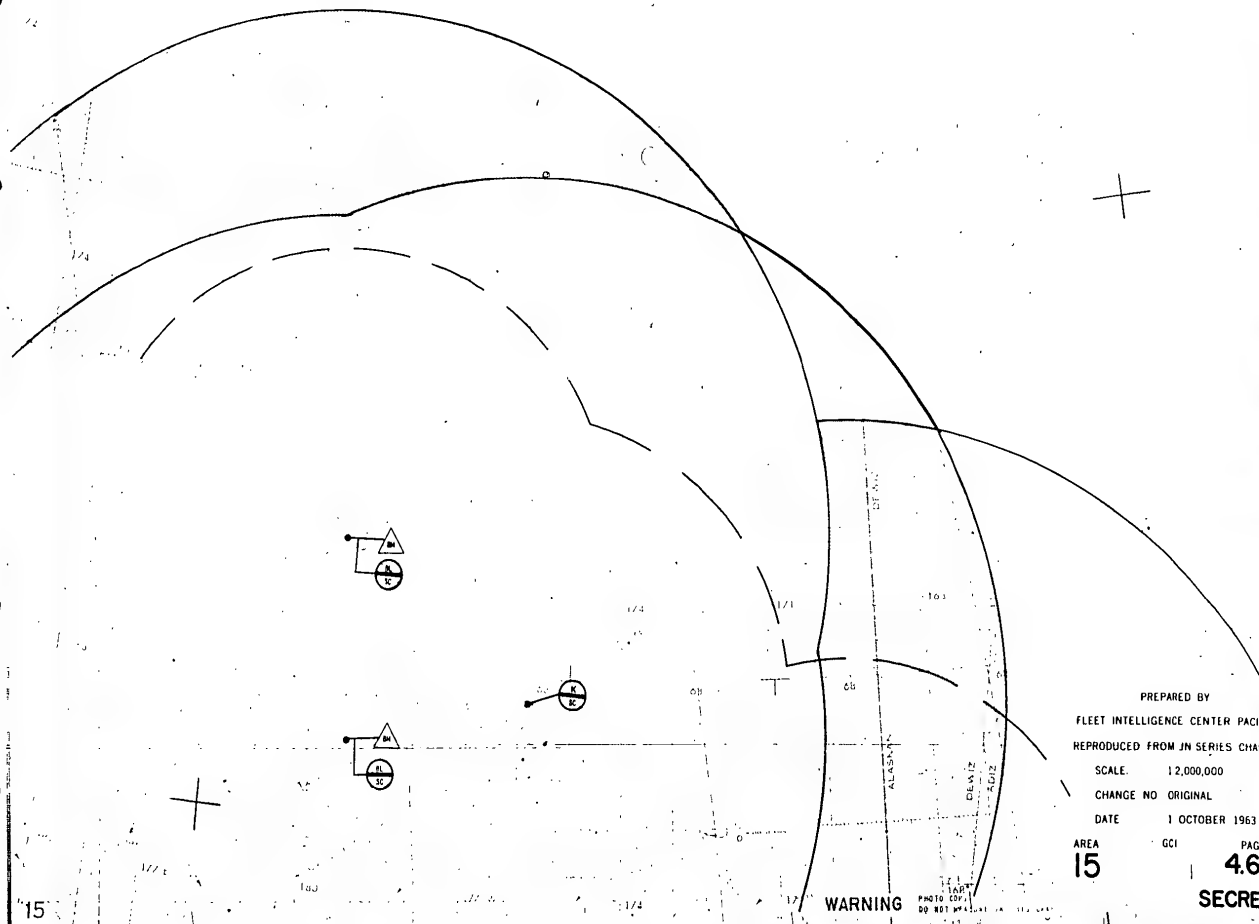
SURFACE TO AIR MISSILE (SAM) SITES, GUN LAYING RADAR, AND AAA PLOTS (SAM/AAA PAGES)

★ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ★ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SURVEILLOR
 W WHIFF
 AAA SITES
 ◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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AREA 15
GCI PAGE 4.63

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EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 T UNKNOWN
 BK "BECK" (CHINESE)
 EL EAR LOCK
 RM BIG MESH
 C SCR - 270 DA
 D DUNGO
 FF FLAT FACE
 FR FORE REST
 H TACHI 18
 HI HIGH SIEVE
 J JAP NK 1
 K KNIVEREST
 P JAP NK 1 MED 3 / JAP TYPE III
 R HI-DUNGO
 SM SLANT MESH
 SO SO/SEE HOUSE
 SR SPOON REST
 T WHISK
 TK TALL KING
 X CROSS SLOTT
 YF CROSS FORK

--- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 1000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/P PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTIONS
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 1000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE
 FB FISHBONE
 FC FRESKO
 FC-D FRESKO-D
 FG FAGOT
 FH FISHPOE
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

△ EW/GCI RADAR
 ⊖ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 RC ROCK CAKE
 SC STONE CAKE
 SK SPOKE CAKE
 SN SIDE NET
 SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
 --- ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-4 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
 NOTE: THE GCI RANGES ARE ESTIMATES BASED UPON ASSUMED CONDITIONS WHICH SHOULD APPROXIMATE THE PROBABLE EFFECTIVENESS OF INDIVIDUAL RADARS AGAINST AIRCRAFT IN A NORMON ASPECT. IN ALL CASES, AIRCRAFT WILL BE DETECTED BY EW RADARS PRIOR TO REACHING THE GCI HORIZON.
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊕ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 ○ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SURVIVOR
 W WHIFF

AAA SITES
 ◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

Approved For Release 2003/12/19 : CIA-RDP78T05439A000500250003-0

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Approved For Release 2003/12/19 : CIA-RDP78T05439A000500250003-0

EARLY WARNING RADAR PLOTS (EW PAGES)

○ EARLY WARNING (EW) RADAR
 △ EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
 I UNKNOWN
 BK "BKSI" (CHINESE)
 BL BAR LOCK
 BM BIG MESH
 C SCR - 270 DA
 D DUNGO
 FF FLAT FACE
 FR FORK REST
 H TACHI IS
 HI HIGH SIEVE
 J JAP ME 1
 K KNIFE REST
 P JAP ME 1 MED 3 / JAP TYPE III
 R WE-THEMGO
 SH SLANT MESH
 SO SO/EEZ HOUSE
 SR SPOON REST
 Y YOKU
 TX TALL KING
 X CROSS SLOT
 XV CROSS FORK

— THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 1000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY THREE OR MORE RADARS

AIRFIELD PLOTS (A/F PAGES)

● LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
 — THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 1000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES

AIRCRAFT CODE

FB FISHER
 FC FRESKO
 FC-D FRESKO-D
 FG FACOT
 FH FISHNOT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

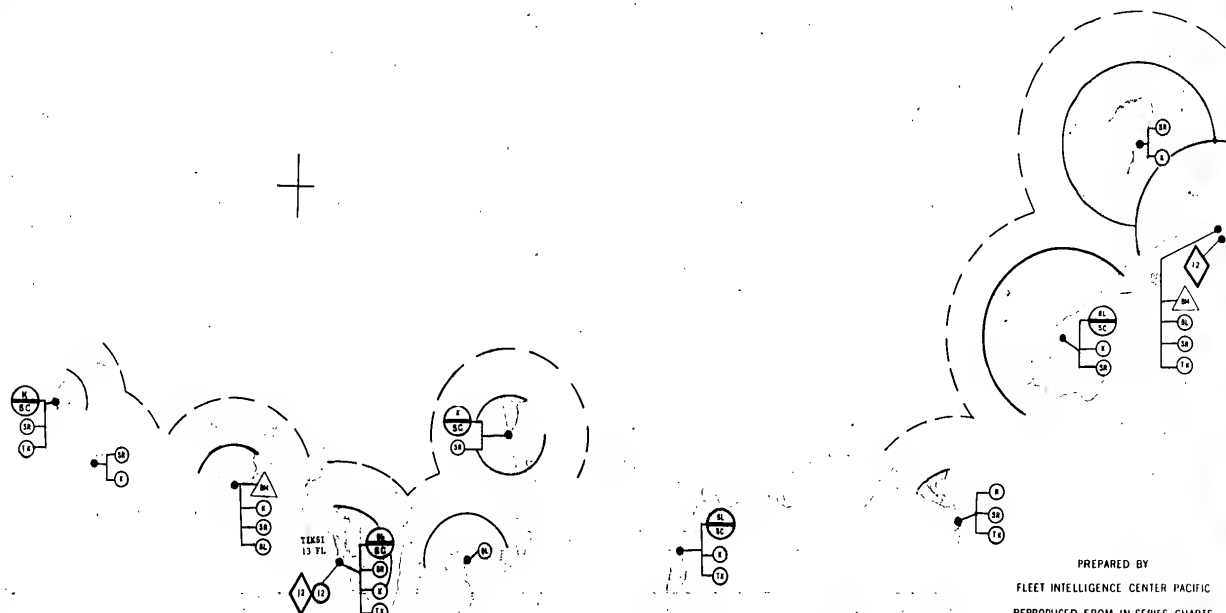
△ EW/GCI RADAR
 ⊕ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
 RC ROCK CAKE
 SC STONE CAKE
 SK SPONGE CAKE
 SN SIDE NET
 SEE EW LEGEND FOR EARLY WARNING RADAR ABBREVIATIONS
 — ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-3 AIRCRAFT FLYING ABOVE THE RADAR HORIZON
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 □ RADAR COVERAGE BY A SINGLE RADAR
 □ RADAR COVERAGE OF THE SEAWARD APPROACHES BY TWO RADARS
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SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)

⊗ CONFIRMED SA-2 SITE
 ★ CONFIRMED SA-3 SITE
 ⊗ CONFIRMED GENERAL SAM SITE
 □ GUN LAYING RADAR
 □ SEARCH LIGHT CONTROL
 F FIRE CAN
 FW FIRE WHEEL
 BT BEAM TRACK
 SV SURVEILLOR
 W WHIFF

AAA SITES
 ◇ LIGHT AAA GUNS (21-75mm)
 ○ MEDIUM AAA GUNS (76-100mm)
 △ HEAVY AAA GUNS (101mm and above)
 NUMBER WITHIN SYMBOLS DENOTES TOTAL GUNS AT SITE

SECRET



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CHANGE NO. ORIGINAL
DATE: 1 OCTOBER 1963

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SECRET

EARLY WARNING RADAR PLOTS (EW PAGES)	
○	EARLY WARNING (EW) RADAR
△	EARLY WARNING / GROUND CONTROLLED INTERCEPT (GCI) RADAR
?	UNKNOWN
BK	"BAKU" (CHINESE)
BL	BAR LOCK
BM	BIG MESH
C	SCR - 270 DA
D	DUMBO
FF	FLAT FACE
FR	FORK REST
H	TACHI 18
HI	HIGH STEVE
J	JAP ME 1
K	KNIFEREST
P	JAP ME 1 MOD 1 / JAP TYPE III
R	HI-DUMBO
SH	SLANT MESH
SO	SO/REE HOUSE
SR	SPOON REST
T	TOKEN
TK	TALL KING
X	CROSS SLOT
XY	CROSS FORK

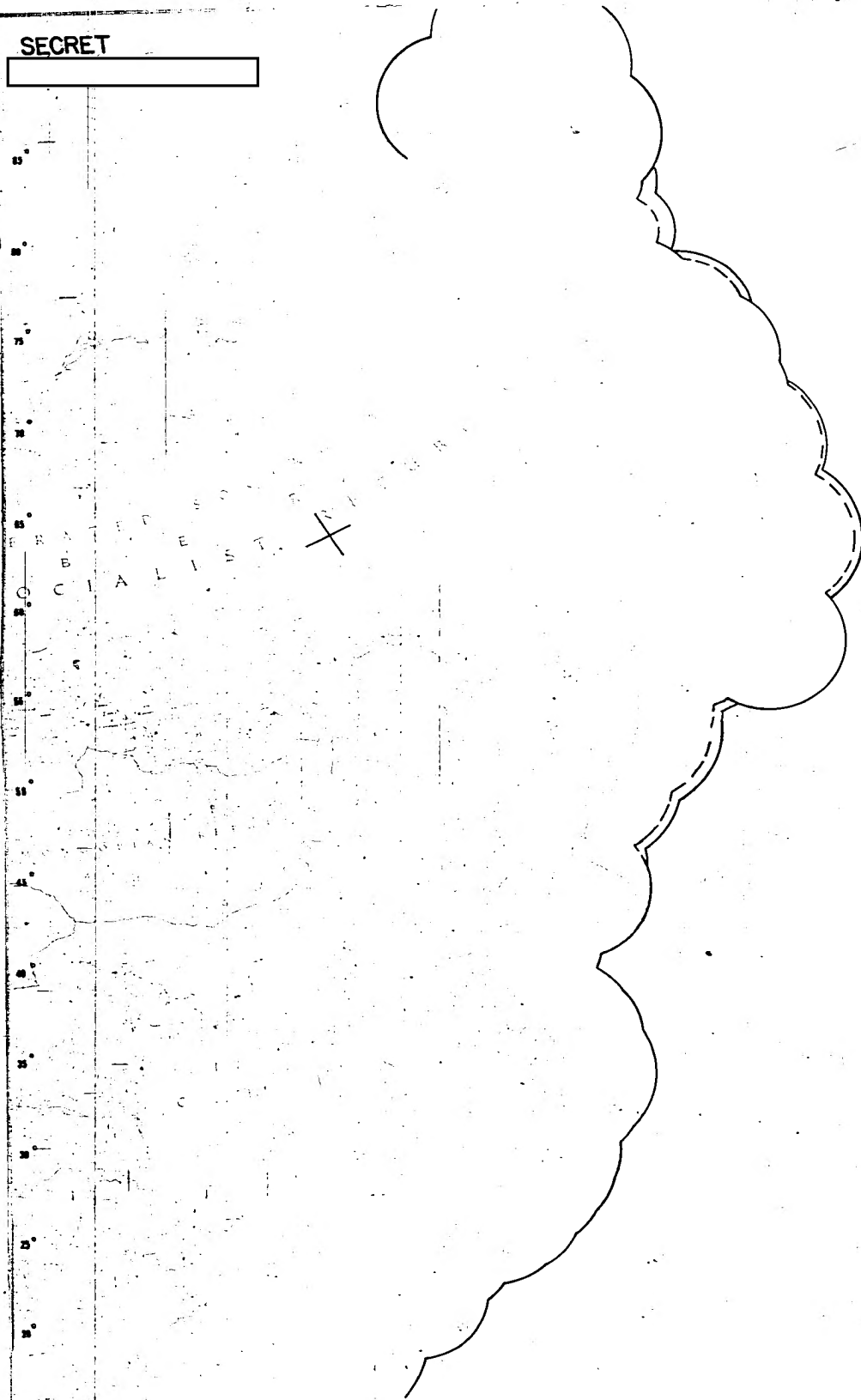
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●	LOCATION OF AN AIRFIELD PRESENTLY SUPPORTING JET INTERCEPTORS
—	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 50' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
---	THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
AIRCRAFT CODE	
FA	FISHER
FC	FRESCO
FC-D	FRESCO-D
FG	FAGOT
FI	FISHOT
FL	FLASHLIGHT
FM	FARMER
FT	FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)	
△	EW/GCI RADAR
⊖	EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
NC	NICK CAKE
SC	STUNT CAKE
SV	SPOON CAKE
SN	SIDE MOUNT
SEE EW INDEX FOR EARLY WARNING RADAR ABBREVIATIONS	
---	ESTIMATED MAXIMUM EFFECTIVE GCI RANGES AGAINST A-1 AIRCRAFT FLYING ABOVE THE RADAR HORIZON.
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SURFACE TO AIR MISSILE (SAM) SITE/GUN LAYING RADAR AND AAA PLOTS (SAM/AAA PAGES)	
⊗	CONFIRMED SA-2 SITE
★	CONFIRMED SA-3 SITE
⊗	CONFIRMED GENERAL SAM SITE
○	GUN LAYING RADAR
□	SEARCH LIGHT CONTROL
F	FIRE CAN
FW	FIRE WHEEL
BT	BEAN TRACK
SV	SUNVISOR
M	MUFF
AAA SITES	
◇	LIGHT AAA GUNS (21-75mm)
○	MEDIUM AAA GUNS (76-100mm)
△	HEAVY AAA GUNS (101mm and above)
---	NUMBER WITHIN SYMMOLS DENOTES TOTAL GUNS AT SITE

X1

SECRET



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○ EARLY WARNING (EW) RADAR
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 ? UNKNOWN
 BK "BKK" (CHINESE)
 RL BAR LOCK
 BM BIG MESH
 C SCR - 270 DA
 D DUNBO
 FF FLAT FACE
 FB FORK REST
 H TACHI 18
 HI HIGH SIEVE
 J JAP MK I
 K KNIFEREST
 P JAP MK I MOD 3 / JAP TYPE III
 R HI-DUNBO
 SM SLANT MESH
 SO SO/SEE HOUSE
 SR SPOON REST
 T TOWER
 TK TALL KING
 Y CROSS SLOT
 YF CROSS FORK

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 --- THEORETICAL RADAR HORIZON FOR AIRCRAFT AT 2000' ALTITUDE, COMPUTED USING ESTIMATED ELEVATION OF RADAR SITES
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AIRCRAFT CODE

VB FINISHED
 VC FRESCO
 VC-D FRESCO-D
 VC VACOT
 VH FIREHOT
 FL FLASHLIGHT
 FM FARMER
 FT FITTER

GROUND CONTROLLED INTERCEPT RADAR PLOTS (GCI PAGES)

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 ⊕ EW RADAR CO-LOCATED WITH HEIGHT FINDER (HF) RADAR TO FORM GCI UNITS
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